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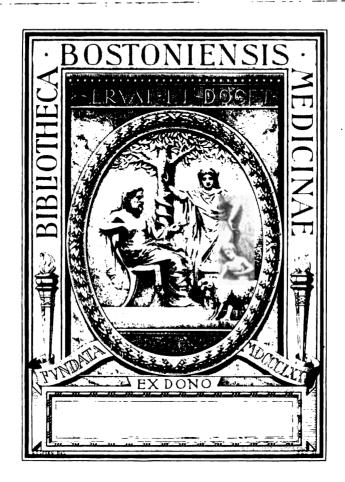
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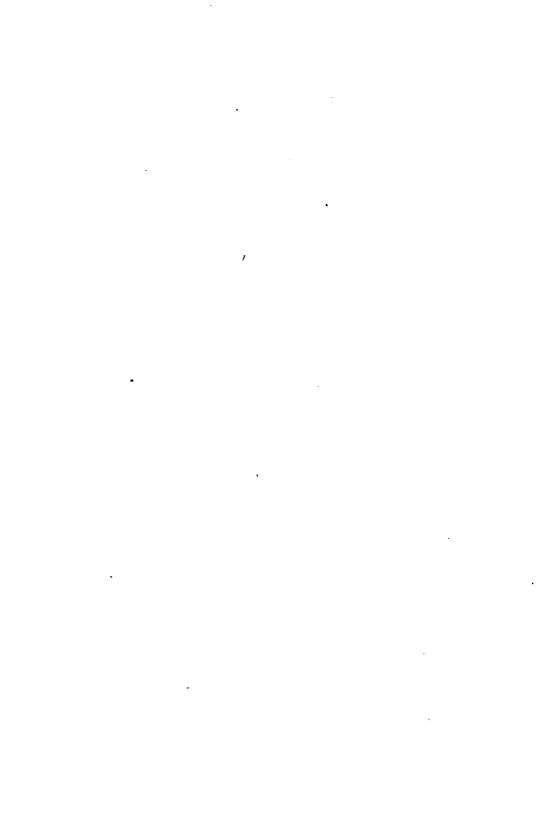
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CONSULTATION OF PHYSICIANS (HOGARTH).

Taylor's portrait is the one at the upper left-hand corner.

(See article by Dr. Mortimer Frank, in this issue.)





JOHN TAYLOR (1703-1772).

Mezzotint by Faber after Ryche.

Circa 1750. From the collection of Dr. Mortimer Frank, Chicago.

8911



OPHTHALMOLOGY.

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No. 1.

THE DIRECT ACTION OF DRUGS UPON THE EX-TRINSIC MUSCLES OF THE EYEBALL—PRE-LIMINARY NOTES UPON A FEW OF THE FINDINGS OBTAINED.*

BY CHARLES A. OLIVER, A. M., M. D.,

AND

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After a careful study of the anatomy of the parts that were to be experimented upon, an extended reading regarding the relative actions of drugs when placed in direct contact with muscular structures, and a critical comparison of the findings which had been obtained in a number of experiments commenced some three years ago, the authors find themselves able to offer a few data which may be of interest not only to those who may desire to pursue the subject, but which may also prove of value to the practical ophthalmologist.

Frogs, guinea pigs, rabbits, and dogs were used in conduct-

^{*}A paper embracing these findings with points of interest for each particular drug which was used, is in preparation by the authors.

To Dr. Horatio C. Wood, Jr., thanks for opportunity to obtain and to employ a part of the material which was used during the experimental work, are due.

ing the experiments. Apparatus, both improvised and of skilled workmanship was employed; drugs of the most certain kind, in amounts of known value, were made use of; and testings done in all manner of different ways, were performed; while competent observers, who watched each step of the procedures, did the work

Preparatory studies to obtain a basis with which to compare the peculiarities of action of the drugs that were to be used upon the different types of animals were made. These were done both upon the separated and the bared living muscle and nerve tissues of the chosen animals. This done, various stimuli were made to act upon the tissues while they were immersed in plain sterile water and in sterile solutions of various drug materials. Definite strengths and fixed amounts of the drugs were then injected into either the muscular structures, the enveloping capsule, or the surrounding tissues.

The first general conclusion of indisputable definiteness obtained, was that there is an idiocratic response of the extrinsic muscles of the eyeball to the direct action of certain drug materials in the mammalian forms of animal life; while the second, was that this action not only is in direct relationship with the amount and the strength of the drug employed, but it is in definite proportion to the character and the condition of the muscle itself.

An interesting special finding was that certain metallic salts of high specific gravity and simple forms of crystallization gave the most rapid and the best results; results which were probably dependent upon increased solvency and better osmosis.

POSTERIOR CORTICAL CATARACT OF TRAUMATIC ORIGIN.*

BY

CARL KOLLER, M. D.

NEW YORK.

Mr. L. S., a young man, at that time 26 years old, presented himself Nov. 4, 1899, with a fresh perforating flap-wound of his left While splitting wood in the cellar of his house a piece of it had struck his left eye with considerable force. was moderately irritated, the anterior chamber was abolished. There was no prolapse of iris. Tension-2. Perception of light and projection were normal. In the outer upper quadrant of the cornea was a small flap-wound, of equitriangular shape. side was about 3 mm. long, the free angle pointing upwards, the base horizontal, going from the center of the cornea directly out-The edges of the flap were very sharp and thin and consequently the inner wound of the cornea was very small. Evidently the blow had been almost tangential, striking from up downwards, which was in accord with the circumstances of the injury. dressing was applied to the eye and the healing of the wound took its normal course. The anterior chamber was re-established after a few hours.

When the eye was examined after six days and a more thorough examination was made, the flap was found well adapted, although still somewhat swollen, so that the impression of conical cornea was produced. In the region of the posterior pole of the lens a delicate, star-like somewhat diffuse opacity was present. and a half weeks after the injury the scar was entirely smooth. and the curvature of the cornea appeared normal, although examination with the ophthalmometer revealed considerable corneal astigmatism. The opacity at the posterior pole was smaller, but was much better defined. Vision was 6-18; with a stenopacic slit it was 5-12. This better definition of the posterior opacity permitted now a better scrutiny of the anterior part of the lens by means of the ophthalmoscope, and a condition was revealed, which had most likely existed from the start, but had escaped notice. In the anterior capsule of the lens, exactly corresponding to the inner angle of the corneal wound, was an opacity not larger than the finest dot and adjoining it, to the outward and downward, there was in the most anterior layer of the lens a delicate frost-like opacity of bean shape, its axis slanting up from the nasal to the temporal side. Six months later there was no change in either of the two opacities, and practically the same condition was found one year after the first injury. The corneal astigmatism was reduced to 1 D. and the vision, after proper correction, was %. It is now five years since the accident and all the conditions have,

^{*}Read before the section on Ophthalmology of the New York Academy of Medicine, October 17, 1904.

with small variations, remained stationary. The corneal scar is entirely smooth and visible only with focal illumination. The anterior cortical opacity is larger than in the beginning, having extended nasalwards and upwards beyond the central dot, so that it almost fills the whole space of the dilated pupil. Its original part is a little more saturated; the outline there is sharper, and round, whereas in the newer part the opacity is extremely delicate in shape and is scalloped with hazy outline. The posterior opacity, which was a star-shaped small disk in the beginning, has not changed materially in intensity or size, but it is of pentagonal shape now, with a granular well-defined outline. Its body can be readily trans-illuminated. Vision has remained—%.

Posterior cortical cataract of traumatic origin, would seem to be of very rare occurrence, judging from the very few cases that have been recorded in literature. Most likely the rarity of the affection is only apparent, its presence perhaps in many cases being hidden behind the extended anterior opacities which are so common in perforating injuries to the lens or contusions of the eye. It would not even be surprising if systematic experimental investigations were to show that posterior cortical cataract was a very common sequel of traumatism to the lens.

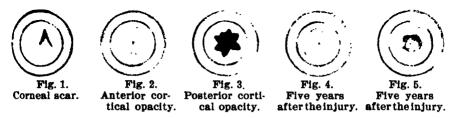
According to Fuchs¹, to whom we are indebted for most of what is known of this form of cataract, one ought to disting. uish sharply between posterior polar and posterior cortical cataract. Posterior polar cataract is a small white dot at the posterior pole of the lens, which on account of its deep situation is not easily discovered, unless looked for. It is outside the lens adhering to the posterior lens-capsule, and therefore is also called central posterior capsular cataract. It is congenital and owes its origin to incomplete involution of the central hyaloid artery. With this polar formation we have nothing to do in the following. Posterior cortical cataract is much larger, and being a part of the posterior cortex of the lens shows the structure of the latter; it has the shape of a star, copying the arrangement of the lens fibres at the posterior pole of the lens. It is very common in degenerative affections of the deeper structures of the ye, such as chorioditis, retinitis pigmentosa. liquefied vitreous, etc.

As a sequel to traumatism it has been recorded only a very few times. In part of the cases it appeared after a piercing wound of the lens, in others after a simple contusion of the eye, without tearing of the lens capsule or the suspensory ligament. The interesting and puzzling fact is that, even in the

¹Textbook, 7th German edition, pages 439 and 443.

cases of perforating wound, the location of the lens-wound seemed to have no relation to the posterior cortical opacity, as the wound in the lens must not necessarily reach to the posterior cortex in order to produce the opacity, and in fact was entirely peripheral in some cases.

The cortical opacity develops in the next days after the injury, and may develop into complete and total cataract. In most cases it remains stationary after clearing up somewhat in the first weeks. Sometimes this clearing is very considerable; the opacity has never been observed to disappear entirely.



Figs. 1, 2 and 3 indicate the appearances a short time after the injury. Figs. 4 and 5 show the condition five years after the injury.

This clearing or disappearing makes it very likely that the cause of the opacity is not always a destruction or alteration of the lens fibres, but it may be due to some deposit between them, which can again disappear.

Various theories have been advanced to explain the origin and the true nature of this curious formation, which so evidently copies the structure of the posterior lens-layers, but in the absence of pathological examinations, we are limited to conjectures and analogies. According to Fuchs, "the quick development and the possibility of a total disappearance of these opacities points to their not being caused by a change of the lens-fibres. Most likely we have to deal with a gorging of preformed spaces (lymph-spaces) in the lens by a liquid, which can disappear again from them." As an authority for the existence of such interfibrillar spaces he quotes Schloesser, who, in his specimens of experimentally produced traumatic cataract. had demonstrated a system of such spaces, which partly were concentric around the nucleus, and partly parallel and near the posterior surface of the lens. Similar spaces had previously been described by v. Becker in lenses, which he had treated with hardening fluids after removing them from the eves. Since that time more recent investigations have been made with newer

methods less open to reproach, and the weight of opinion seems to be against the assumption that preformed lymph-spaces exist in the normal lens. Leber² rejects the theory that lymph circulates in interfibrillar spaces, and says that all thorough investigations of newer date show, that the lens-fibres simply lie close to each other and no measurable gaps are present between them. The existence of a similar quantity of a cementing substance must of course be admitted, as without it the contours of the lens-fibres would not be visible.

Ouite recently zur Nedden has published an interesting article on this subject, in which he describes three cases of traumatic posterior cortical cataract, adding two others in which an attempted discission of the anterior capsule in operations for myopia had resulted in the formation of posterior cortical cataract. I may add that I have had several similar experiences. when, after trituration for maturing senile cataract, instead of the expected progress of the anterior capacity the posterior cortex became very opaque. Zur Nedden comes to the conclusion that in these operative, like in the traumatic, cases with or without opening of the lens-capsule, considerable momentary displacement of the lens within the capsule takes place. leading to a loosening of the attachments of the lens-fibres on the posterior capsule. According to Leber, these attachments have the same protecting influence against the entrance of fluids, as the epithelium of the anterior capsule. Zur Nedden assumes that in consequence of this hypothetical loosening some fluid from the vitreous enters into the cementing substance between the fibres of the lens and thus produces the opacity. which can grow less and even disappear entirely according to the less intense or trifling alteration of the cementing substance. Why this loosening of the lens-fibre attachments should take place on the very pole of the lens, and why it should be absolutely symmetrical is not explained by this hypothesis. only way leading to a satisfactory explanation of the curious and interesting phenomenon, of the lens reacting with a change on its posterior pole to injuries inflicted on its anterior surface. seems to be the path of experiment and pathology.

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CONTRIBUTION TO THE TECHNIQUE OF MAY'S OPERATION FOR TOTAL SYMBLEPHARON.

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Translated from the German by Dr. James Moores Ball,

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The operative correction of total symblepharon belongs in a technical sense to the most difficult class of ophthalmic operations and requires great skill and perseverence. It is for this reason that ophthalmologists are constantly looking for a better method which may offer the prospect of better results in the treatment of this condition. At the present time, in difficult cases of symblepharon, the grafting of mucous membrane (Stellwag's method), or of epidermis (Thiersch's method), is practised. For the formation of a new conjunctival sac, particularly the formation of a new fornix, the so-called Stellwag traction-suture, which holds the flaps in their deep position, answers the purpose. The results of this operation in some cases are comparatively satisfactory; in other cases the results leave much to be desired.

The use of epidermis possesses many advantages over the grafting with mucous membrance.¹

Aside from the fact that a sufficient amount of mucous membrane for transplanting purposes can be obtained only with difficulty, the mucous grafts shrink more rapidly and in the cases where the opposing wound surfaces have been covered with such flaps, as is necessary in the formation of a fornix by Stellwag's method, it comes more easily to a renewed growth, because the epithelium in the first time suffers injury and becomes pierced by vessels.

The grafting of Thiersch flaps seems to give better results. These flaps also shrink, but they are more pliable and plastic than the elastic mucous membrane, so that they adapt them-

¹See Axenfeld: Monatschrift für Augenh Bd. XXXVIII. 1900, p. 854.

selves better to the wound surfaces. It is particularly important that the flaps overlap one another on their beds: if this is uneven they should touch by their margins so as to offer a better prospect of attachment to the wound surface. Especially in cases in which the surgeon has to graft an angular, narrow wound is it best to use epidermis by the Thiersch method. In spite of these cautious rules, which must be observed in every operation for symblepharon, a shrinking of the newly formed sac occurs only too frequently. The evil forces, as Czermak expresses himself, constantly seek to unite anew the separated parts. In order to overcome this evil tendency. May proposed another method which is as follows. After the lids have been dissected from the eveball Thiersch grafts were placed with the epidermis in contact with a glass prothesis and this was then inserted into the newly formed cul-de-sac, so that the raw surface of the graft rested against the wound surface in the evelid. The lids were sewn together. The prothesis was kept in this situation for seven days. Healing, as in a case described by May, occurs rapidly. In this procedure the prothesis and the grafts simultaneously press against the wound surface and form a barrier which prevents the reunion of the separated surfaces. The procedure which Woodruff has recently published, depends on the same principle. His operation differs from May's in this respect that he places the grafts not upon a prothesis, but over a lead plate, which is pierced with holes through which the grafts are sewed to the lid margins. He describes six cases which were operated on in this manner and each one obtained a conjunctival sac 15-20 mm. in depth. A prothesis can then be easily worn. Lindström reports four cases of extensive symblepharon which were operated by May's method. Because of a case in which the prothesis was uninterruptedly worn for only eight days and in which the fornix became shallow, requiring a second operation; and by reason of another case in which, although the prothesis had been worn uninterruptedly for fourteen days, but after a short time was not worn at night, so that the contraction returned, Lindstrom advises that the prothesis should remain in the orbit at least fourteen days, that the lid-margins should be sutured, and that the sutures should remain a long time. Lindström, as well as Woodruff, emphasizes this point, that the grafts should be cut as thin as possible, so that thereby, in the formation of the upper fornix, a better mobility may be obtained.

By the courtesy of Professor Axenfeld I am enabled to report two cases of severe total symblepharon which were operated upon by him.

The first case was that of a three-year-old boy with total symblepharon of the upper and lower eyelids and was operated by the method of May. Following is the history of this case:

J. E., from Ober-Wettlingen, came to the clinic February 11, 1903, on account of total leucoma of the cornea and total symblepharon of both right eyelids.

The patient had a considerable time previously passed through a severe attack of conjunctivitis—probably of diphtheritic nature—from which time the following conditions date: Extensive cicatrices of the conjunctiva. The entire conjunctival sac is absent, the lower portion being completely flattened. A row of short, tense cicatrical bands extends from the lower lid-margin to the eyeball direct almost to the cornea, and even on either side of the cornea the conjunctiva is shortened. There are also extensive adhesions of the upper lid, a heavy strand extending from the middle lid-margin (slightly to the nasal side) to the middle of the cornea. A probe cannot be passed beneath this strand. The cornea is totally opaque. Internal structures are invisible.

Feb. 18. Plastic operation, after May, under anesthesia. The lids are first dissected from the eveball above and below. forming deep concavities extending beyond the physiological conjunctival fold. Thin Thiersch flaps are procured from the upper arm and with wound-surface outward are laid upon an adjusted prothesis which fills the newly made cavity as well as possible. Upon the upper portion of the prothesis a broad flap is laid, and upon the lower two flaps are placed, each two cm. long and one and a half cm. broad. In inserting the prothesis it is very difficult to place the flaps in situ. If the lower half of the prothesis is first inserted, which is easily accomplished, then the upper flap tends to become displaced when the upper lid is drawn over, and vice versa. The insertion finally succeeds apparently evenly and well, after the lids were drawn apart with sharp hooks sufficiently to allow the prothesis to pass in without contact. The lids are closed over the prothesis. Bandage.

Feb. 20. Change of dressing. Lids closed. Only slight watery secretion.

Feb. 21. To prevent the retention of secretions, the prothesis is cautiously removed, but immediately after cleansing returned. The flaps have united, but below there are uncovered places between them. In the new cavity there is somewhat more secretion. The unmanageable boy resists vigorously during this dressing. The prothesis now remains under the band-

age until about the fourteenth day, when it is daily changed on account of increasing secretions.

March 15. Beside the lower flap, especially outward near the lid commissure, granulations had formed, evidently at those places that had not been wholly covered. These granulations are snipped off with the scissors. After the removal of these the heretofore profuse mucoid secretions are decidedly reduced.

From March 25, continued changing of prothesis on account of secretions, under much difficulty.

From April 2, daily repeated cleansing of eye, but prothesis is retained. Herewith, at least, not more profuse secretions than with more frequent changing. With the sloughing of the granulating patches, the remaining highly hyperemic patches of the mucous membrane are now also taking part.

April 6. The formerly prevailing polypoid proliferation exists now only in a small measure. The transplanted flaps are now distinctively smaller and the space for the prothesis is relatively narrow.

Discharged by request with prothesis.

At home there are increased secretions accompanied by eczema of the lids. The removal and insertion, from time to time, of the prothesis was accomplished only with extreme difficulty by the attending physician, and ultimately the prothesis was despaired of. The newly formed conjunctival sac shrunk and the flaps became continually smaller. On account of the gradual inversion of the lid-margins there is continued catarrhal secretion.

We observe that in this case the May method of operation led to totally negative results, although it was not the exclusive cause. The secretion involving especially the granulating areas increased constantly, the changing of the prothesis on account of the child's obstinacy became very difficult, so that the prothesis had to be discontinued, the flaps continued to decrease, and ultimately resulted in the complete shrinking of the new conjunctival sac. We must assign the cause of this negative result, first, to the ineffective fixation of the transplanted flaps; second, because by this method one cannot assure complete covering simultaneously above and below. The youth and rebellious nature of the patient also played an important role in the after treatment. The small flaps were not fixed by suture and could only with difficulty be apparently adjusted at the first insertion of the prothesis, and later were easily displaced, so that various areas of the wound-surfaces had to remain uncovered, especially through the simultaneous introduction of the flaps upwards and downwards.

This case, which was especially difficult because of the adhesion of both lids to the eveball, signifies that in superior and inferior symblepharon the May method is inefficient. The cases of May and Woodruff were not so difficult, and were restricted to symblepharon of the one lid only. In one of Lindström's cases, in which there existed almost total adhesion between the eveball and the anterior portion of the upper lid, and total adhesion between the bulbus and the middle portion of the lower lid, there followed, after the May operation, early shrinking of the lower newly-made fornix, and only after the existence of an upper fornix, did the repeated attempt of the May method give a good result on the lower lid. It is also evident that in these most difficult cases of symblepharon of both lids. as was the case in our patient, where the prothesis must be covered above and below with flaps, and in this manner is to be introduced into the newly-formed artificial cavity, it facilitates displacements and incomplete covering more readily than in those cases where the symblepharon is restricted to one lid. and where the prothesis with its uncovered part rests on the normal or priorily, newly constructed conjunctival sac. In such light forms of symblepharon the May method is good. In severe cases of upper and lower symblepharon, it would perhaps be better to proceed according to Wolff's method—the fastening of the transplanted flaps in the newly formed upper fornix onto the tendon of the superior rectus muscle, and for the lower lid Czermak's procedure could be employed, which recently has been modified by Prawossud, in the manner of forming a quadrangular lid-flap, grafting this and the woundsurface of the bulb with small grafts, and after the separation of the two grafted surfaces with staniol, and after the fornix is secured with loop-stitch sutures, the quadrangular lid-flap is again adjusted to the same place. We must, however, confess that in the severest cases of symblepharon we have so far not always achieved the desired result. One case, where a symblepharon and ankyloblepharon of both lids was ultimately restored after four operations, is the one of Axenfeld.

Being dissatisfied with the case described, Prof. Axenfeld proceded in the second case somewhat differently. This case consisted of an especially severe, total symblepharon of the lower lid. The eyeball was absent and the lower lid was directly adherent to the orbital tissue. I will give in brief the history of the case:

J. P. of Muelheim, act. 23. Admitted to the clinic on Feb. 3, 1904.

R.: Symblepharon totale palpebrae inferioris et anophthalmus operativus.

Anamnesis: At the age of six, a hot particle of iron flew into the patient's right eye. From this date the eye was totally blind and severely inflamed, so that in 1895 the patient had the eye removed. A glass eye was inserted which he wore only for a short time. The following two years he wore no artificial eye. In 1897 he underwent another operation and received another prothesis, which he could wear no longer at Christmas, 1903.

Status: R.: The eyeball is absent. On the lower lid, extremely laterally, only a small portion of the ciliary margin remains, while the integument of the balance of the lid blends without sharp, marginal border with the conjunctiva, which is adhered to the orbital tissues. The posterior surface of the lid, which seems to be minus its tarsus, is flat-wise adhered to the orbital tissues. Only at the nasal extremity of the lower lid there is between the lower lid and the bulbar conjunctiva a very small remnant of the conjunctival sac. The curvature (commissure) of the external canthus is obliterated. The mucous membrane of the remainder of the eye-cavity is pale and flaccid. The upper lid presents nothing unusual. The tear ducts admit of free passage. O. S. normal.

Feb. 5. Plastic restoration of the lower conjunctival sac under anesthesia.

The lower lid in its entire extent is first severed from the inner conjunctival fold to a point beyond the physiologic fold. Next a long thin Thiersch skin flap is dissected from the upper arm and is longitudinally inserted downward into the newlyformed conjunctival sac, along the entire length of the lid, wound-surface resting on wound-surface. The two narrow margins of the flap are then stitched with three, fine silk sutures, the one to the wound-margin of the conjunctival fold. the other to the wound-margin of the lid (the flap having first been fenestrated in three places, to facilitate the passage of the needle in order that the epidermis flap be not displaced). After smoothing of the flap, which in its breadth extends almost to both canthi, a traction suture is applied so as to draw the two halves of the flap against the wound surfaces, and then (May's method) a previously adapted prothesis is introduced, over which the lids close well. A binocular bandage was applied At night the dressing was changed. Lids rest properly. Traction suture is removed.

Feb. 10. Change of prothesis. The flap is totally adhered. The six sutures are removed. There is some superfluous material at the posterior margin of the flap and this is removed.

Feb. 14. Prothesis is retained day and night, being removed daily for cleansing only. At the outer canthus a granulating surface is observable which is not covered with epithelium. Secretion stronger. Further continued wearing of prothesis.

Feb. 18. At the outer canthus agglutinations appear at the places where the open granulating areas exist.

Feb. 19. Renewed plastic procedure with epidermis covering

Feb. 19. Renewed plastic procedure with epidermis covering the granulating areas at the outer canthus. Granulations are removed under anesthesia and the granulating areas are curetted with a spoon. A broad epidermis flap, as in the first operation, is secured from the upper section and with wound-surface outward, is inserted into the deeply-formed sac, being directly attached to the formerly adhered flap, and after careful adaptation, is fastened with three sutures as formerly. The prothesis is next inserted. Binoculus.

Feb. 20. Change of bandage. Slight secretion. The flap lies well adjusted to the lid margin. Prothesis retained.

Feb. 23. Increased secretion. There is a small uncovered island between the first and second flap, the latter having otherwise adhered well. Prothesis changed evenings and mornings.

Feb. 28. There is a secreting granulation button at the island above mentioned, and this is removed with the scissors.

March 3. The island mentioned begins to cover with epithlium from the margins. Secretion diminished.

March 9. The territory comprising the two epidermis flaps presents now a continuous, symmetrical surface, the above mentioned island having become fully epithelialized. The depth of the newly-formed conjunctival sac is again somewhat reduced.

March 18. Secretion slight. Discharged by request. Although the newly-formed sac is somewhat contracted, the patient is nevertheless able to wear the same prothesis which was inserted at the time of operation.

As may be seen from the history of this case, the operative procedure employed gave a more satisfactory result, despite unfavorable conditions, such as, 1. The barrenness of the entire lower conjunctiva, including the outer canthus, 2. The absence of the eyeball, the adhesion of the lid being with the orbital tissue and, 3. The absence of the tarsus of the lid. The patient received a new conjunctival sac which permitted of the wearing of the first adapted prothesis. If we compare this modification of the May method with the one which he himself presented, and which was employed in the first case, we ob-

serve that the difference, together with the advantage of this modification, consists therein that the flaps are not directly placed on the prothesis, and in this manner pressed against the wound-surface, but are fixed by sutures. which offers a certain guarantee for the proper position of the transplanted flaps. and procures better healing as well as prevents displacements. At the outer canthus, however, there appeared in this case also an agglutination which could not be prevented by the prothesis although it was steadily worn. Lindström reported two cases operated after May, in which also agglutinations had appeared there, and refers the cause to the insufficient wearing of the prothesis. Also, in regard to the earlier case reported by Axenfeld, in which by simultaneously covering the opposing surface with mucous membrane, adhesions arose, he lays the cause of this to the absence of the prothesis. We observe, however, that in our case also the presence of the prothesis did not prevent adhesion at the outer canthus. We are much more inclined to believe that it is the especially unfavorable condition of this place, at which the flaps do not permit of a smooth adjustment, and to which the prothesis does not fully extend, so as to prevent wholly the contractions at this point. The construction of the new canthus-angle is by far the most difficult part of the operation. Only after renewed grafting of the canthus with fixed flaps, in our case, did a sufficient restoration follow.

The suture fixation of the little flaps also seems to have the advantage of dispensing with many measures disagreeable to the patient, such as retention of the flaps by pressure of the prothesis, and the stitching together of the eyelids, which thus becomes unnecessary.

Summing up, we can draw the following conclusions:

- 1. In very young patients, who offer resistance when the prothesis is changed, and especially during the treatment, a plastic restoration of the conjunctival sac in symblepharon of high degree is above all not advisable. It is necessary that one have the comprehensive co-operation of the patient in these difficult procedures.
- 2. The suture fixation of the flaps in conjunction with the immediate insertion of the prothesis, offers better prospects for the maintenance of the newly-made cavity than the introduction of the flaps directly on the prothesis.
- 3. In symblepharon above and below, the May method without suture fixation is inefficient.
- 4. It is also necessary that in the grafting of the canthi the flaps be absolutely fixed.

In conclusion, it is a pleasant duty to express my sincere thanks to Professor Axenfeld for the kindly yielding of this case to me, as well as the friendly support he rendered me in advice and deed during my labors. I offer my sincere thanks to privat docent, Dr. Stock, for the assistance he kindly rendered me in my labors.

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INFLUENCE OF THE SCHOOL UPON THE EYE AND SPINAL COLUMN.*

BY DR. LIEBREICH, PARIS. (1)

Translated from the German by Dr. T. T. Blaise, Mason City, Iowa.

With 7 Illustrations.

One might ask why I desire to discuss in common the influence of the school upon two parts of the body so different as the eye and spinal column. The reason is that the injuries which arise, and the removal of which is to be urged, affect alike the eye and spine. All of these injuries may in the simplest manner be summed up as the common result caused by the too close approximation of the head to the book during reading and writing. Deviations from the normal of the eye and spinal column depend upon this.

We must then ask ourselves:

- 1. How this too near approximation operates;
- 2. Through what is it brought about:
- 3. How can it be removed.

This too near approach operates upon the eyes in that too great an exertion is demanded of the muscles (the recti interni) that converge the two visual lines, this in itself having a fatiguing effect, which is by far not the worst feature. Between these muscles on the exterior surface of the eyeball, and those entirely different muscles of the interior of the eye, the accommodation muscles, there exists a relation which is generally a very constant one, and which yields only slightly and reluctantly. This enables each eve separately to adjust itself to that distance at which the visual axes converge (or meet). It is accordingly apparent, that when we make too strong a convergence effort, the accommodation tension must also become too great. This, however, is the conditioning cause of near sightedness developing in school children. The great importance of this fact is shown most clearly in the numerous statistical investigations made by Cohn, Hersing, Seggel and others, based upon a large number of children.

^{*}Klinische Monatsblatter für Augenheilkunde, July-August, 1904. (1) Dr. Liebreich was prevented from going to Nürenberg to deliver this Address which was intended for the Congress held there.

Among the various interesting conclusions derived from such investigations, which we cannot here discuss, I wish to emphasize only this, that the number of myopes from the lower schools to the higher, and from grade to grade, increases up to a certain age. Through the too near approach of the head to the table, the normal curvature of the spinal column is enhanced and by simultaneous rotation of head and body, lateral curvature ensues. How these curvatures arise in children, notwithstanding their healthy bone structure, I have first illustrated with thin sections of the vertebrae, and in 1878 published the same.

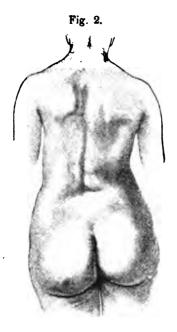
I will exhibit here a few prepared specimens, among which the vertical cut through the body of the vertebra is instructive (Fig. 1). You will observe from this that only narrow strata of bone elements are horizontally bound together, forming lines

Fig. 1.



of connected elements running parallel with and near the upper and lower articulate surfaces. In the entire middle portion of the specimen the bone elements present lines of connections vertically and are horizontally only sparingly bound together. The consequence of this structure, as in our modern iron constructions, is that a certain weight can be borne in a certain line of pressure only; accordingly in this case the vertebrae sustain a weight directly from above, whereas a lateral and side pressure gradually causes mischief, thereby destroying the parallelism between the upper and lower border of the bone. If now even a slight deviation from the normal occurs in each separate vertebra, it will, coupled with the lost symmetry of the intervertebral cartilages, suffice to present a marked scoliosis. Slight degrees of curvature are unfortunately seldom regarded at first, inasmuch as the apparel covers effectually the irregularities of the form arising therefrom, but one can early observe the difference in height and tendency of the shoulder blades, as well as the prominence of the hip, *i. e.*, one recognizes then only the sequelae, but the true anomaly is discovered only after a careful examination of the spinal column.

In the illustration of one of these cases, (2), you will observe that the inferior angle of the right shoulder blade is more prominent and dips lower than the angle of the left; that the ribs of the right side curve more prominently backwards than those of the left; that the contour of the body presents on the



right side above the hip an incurve, an angle, while the left side, on the contrary, presents almost a straight line with but slight curves. Accordingly, the right hip protrudes and is on a higher plane than the left.

Less marked are the outer visible changes of the spinal column that are caused by the above mentioned alterations. This is due to the facts that in this form of school-scoliosis of healthy children, the lateral curvature is much less than in the case of diseased bone, while the main factor lies in the rotation of the spinal column on a vertical axis. This rotation consists in the present case of the thorax to the right and the pelvis to

the left, the upper portion of the body thus tending to bend to the right and the pelvis to the left.

Those cases in which the rotation of the spinal column is followed by the resulting manifestations in a reversed direction, like the case here illustrated, are of much rarer occurrence in England, at least, where I made these investigations. Whether any or some of these two forms of scoliosis are caused by too near an approach of the head to the desk-plane, or whether the simple augmentation of the curvature of the too highly arched back with elevated shoulders is caused by this agproach, depends principally upon the writing position.

We must thus differentiate between three equally condemnable positions: First, the one which causes the scoliosis represented in the illustration. The left elbow rests in this position on the desk and in this manner the left arm supports the weight of the head and upper body, while the left ribs bear against the desk, but only half of the right forearm rests on the desk

Second position: The right elbow rests on the desk and bears the weight of the head, while the left is suspended, the hand holding the book. This, as compared with the first position, throws the right shoulder higher, increases the lateral deflection of the dorsal spine, but diminishes it in the lumbar region.

Finally, in the third position, both elbows rest on the desk carrying the weight together, and the ribs on both sides are equidistant from the desk. This position, which is mostly assumed by boys, does not cause scoliosis, but elevates the shoulders too high and augments the normal curvatures of the spine.

The injurious effect is much greater in girls than in boys, due to their slighter bony structure and their period of development being restricted to a briefer time, nor do they enjoy the same degree of counter-balancing activity as boys do in their plays, such as gymnastics, etc.

But why do children carry the head too close to the book?

Many parents and teachers consider this merely an evil tendency, which should be corrected by training or by the repeated admonition "straighten up." This is a mistake which is very detrimental to the child, it being decidedly a pedagogical error to demand of children that which on account of physical and physiological reasons they cannot comply with. Children lower their heads too close to the desk, because they can only under certain conditions hold it up.

Thus we have arrived at the problem which concerns us

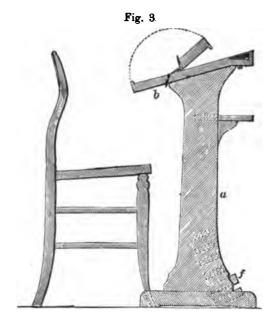
here: what school equipments are required to prevent the injurious influences on the eve and body of children? simple demands always offer a brighter prospect for success than complicated ones, we will materially facilitate the reply to our question by citing the excellent labors of Cohn for their extreme completeness, and also the report of Prof. Laqueur in his professional opinion to the schools of Alsace-Lorraine. We may then simply reply to our question: The hygiene of the school demands proper lighting of the rooms, proper seating, (subsellien) and those pupils who, on account of their eyes. cannot derive satisfactory use of these should receive correction with glasses. As to lighting, it should be so arranged that the light falls from above and from the left, but in case such light does not reach those pupils farthest from the windows, it may be supplemented from the right and above, but never should the light come from the direction the pupil faces, since this would do more injury than good. The seating arrangement should permit of an erect sitting posture while writing and reading, as well as permit of the standing erect between the bench and desk. Spectacles should be so that they enable the pupil who cannot see clearly in the normal position, to sit erect.

In regard to lighting we can offer little complaint. While thirty and forty years ago dark and poorly lighted rooms were numerous, they are now the rare exception, nor is it so much a matter of insufficient lighting as of improper lighting. Public authorities as well as architects have earnestly striven to comply with the advice of competent experts. In rare places difficult and almost insurmountable obstacles are met with, such as schools adjoining tall buildings on narrow streets, or the converting into schools of buildings which had been originally constructed for other purposes, etc.

The problem of seating is a complicated one. For the full solution of this problem it would be necessary to adjust the seating apparatus to the proportions of the child, taking also into consideration the growth of the child. This could be done in private or small schools, but unfortunately seldom carried into consideration the average proportions of the pupil. The methods employed for this are manifold. The model which I proposed thirty years ago, and which was adopted by the London school board to accommodate 106,000 pupils, and since has been adopted by a number of smaller schools, such as private schools and so-called "pensionaten," I still deem practical and will present the same to you in its unmodified form. The characteristic feature of this seating system exists in the fact that the height of the desk is exactly the same both for the

smallest and the grown pupils, as well as for boys and girls. The book board is also at the same elevation in all desks, the foot board and the seat, however, varying in height. The back of the seat for boys differs slightly in height from that for girls, but the distance of the seat from the desk, differs according to the size of the pupil.

The individual adaptation can best be demonstrated in the desk and seat (Fig. 3) intended for purposes of private instruction. The individual adaptation is here achieved in that for the smallest pupil a chair with a high seat is selected, the legs of which may be shortened in harmony with the growth

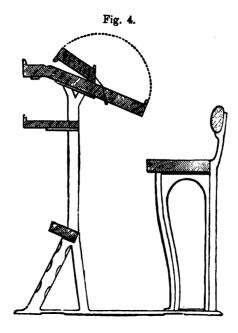


of the child, or, selecting a chair of ordinary height and elevating the seat by placing a pillow on it, we may establish the height as follows: Approaching the sitting child with the desk, a ruler placed thereon parallel with the plane of the desk, should point to the elbow of the pupil whose forearm rests on the desk. If the elbow is lower than the line of the ruler the seat must be elevated, and vice versa.

Two more points remain now to be regulated: The support of the feet on the movable footboard (f) and the support of the lumbar spine by means of the back of the chair.

For the latter we require a very simple, but indispensible correction to maintain the erect posture. Nearly all chairs, from

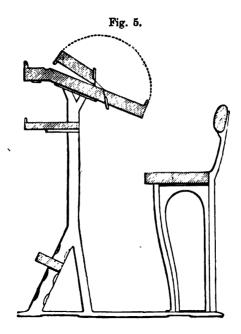
the most ordinary to the finest, are on account of their irrational construction undesirable for the purpose of erect sitting, inasmuch as the curve of the chair-back corresponding to the lumbar curve of the spinal column, is flat, or even concave instead of convex so as to conform to the concavity of the spine at this place. A stick of the thickness of a broom handle placed at the proper place, will almost suffice as support and will render possible an erect posture, which would be tiring and ultimately impossible even with the finest, upholstered chair which is flat, straight or even concave. By making the experiment you can



easily convince yourself of this fact which is of the greatest importance in the construction of a seating system for schools, and you will conceive the injustice of reprehending children for assuming bad postures when we deny them the necessary support. Besides the proper form of a chair, I present to you a very simple apparatus which corrects the faults of an ordinary chair. This apparatus should be fastened to the chair back so that the upper margin is on a level with the anterior margin of the desk when adjusted for boys, while it should be 5 cm. higher for girls. But we cannot carry out the correct principles to such perfection in the general schools with our seats and desks. It is consequently desirable to approach this result as

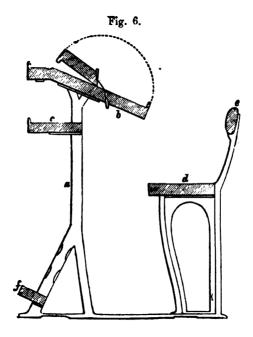
near as possible. I have acordingly, after a great number of measurements and experiments, figured the proportions of three styles of seating apparatuses (Fig. 4, 5, 6) so they will fairly answer the purposes for the various pupils of the general school. and I observe that those few pupils of the medium sizes who deviate exceptionally in one or another way in bodily conformity, can sit erect with sufficient comfort in these seats.

The body should maintain precisely the same erect posture during writing as during reading, and should be supported on the lumbar vertebrae, and should not in the least hang from the shoulder joints with one or both arms supported on the desk.



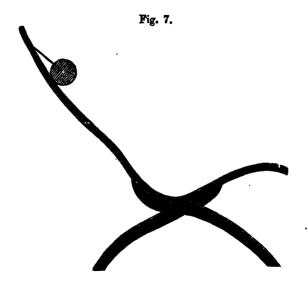
The arms should lie passively with forearm on the desk, bearing no body-weight, and in such manner that both hands are equally distant from the body, resting on the book, the edge of which lies parallel with the edge of the table. This position, which was suggested by me in 1872, and which is rendered possible by the here presented method of seat-construction, was also adopted by the Commission d'Hygiene scolaire in their report in 1884. I was consequently very much surprised to observe in the report of the schools of Alsace-Lorraine in which Prof. Laqueur, as already alluded, extended me the consideration of confirming all of my views in regard to the school hygiene of the

eyes, to meet, however, with a difference of opinion regarding the question of the writing position, which I regard as the most important. The principal basis of this difference lies in the fact that in Alsace-Lorraine a certain method of writing has been adopted as correct, and the child is adjusted to the method, while I deem the position of the pupil as the dominant factor to which the proper method of writing must be adapted. I feel justified in this opinion for the reason that I have gathered my convictions through observations made from the bountiful material derived from a practice of fifty years in Germany, France and England, to the capitals of



which countries I was called repeatedly on scientific and political affairs, justified, I say, in the conviction that the deleterious influence on the eye and spine is during the school life of children most effective during writing. Even with the best of equipments, such as desirable lighting, efficient seating, the most diligent attention of the teachers and the kindliest obedience of the pupils, it is physically and physiologically impossible to attain an uninjurious position during writing if the method of writing does not fulfil the conditions required to sit erect. I hope to convince you with practical experiments on these models which I have brought, that one can

write well, with ease and rapidly when in proper distance from the writing book placed straight from the body, or when one accepts and practically applies the principle of George Sand, "ecriture droite sur papier droit, corps droit."* Nevertheless, the protest has been made that the oblique method of writing admits of more rapidity, is more elegant and is officially required, so that despite the acceptation of this principle by various congresses' and commissions' reports, matters remain unaltered. To extricate ourselves from this dilemma, I vouch-safe a plan which would be acceptable to hygienists and meet with no objections from the pedagogue. According to this we would impose upon the teacher two entirely different tasks



in teaching; the one task would be performed by means of writing, while to accomplish writing the other would be a means. As a means of school instruction and for our further activities as well as general business all pupils must necessarily learn writing. None of the objections offered against vertical writing can be raised against this. In the second place, in which writing becomes the object or result, those who by adopting the oblique form wish to become penmen, secretaries, officials, etc., may take separate training therein. Such training should, however, be under a separate faculty. It will generally develop that all those who have acquired vertical writ-

^{*}With body straight on straight (lying) paper. (Translator.)

ing efficiently, can, after leaving school, quickly acquire any form of such handwriting as may be required for their chosen occupation. If the number of those, to whom oblique writing is the object sought, were doubled, they would still be a minority for whose sake a large majority must not be subjected to the deleterious influence of oblique writing.

In behalf of the health of the children, I can not refrain from assailing the methods of teaching writing from another point. by declaring my disapproval of teaching writing to those who are too young. Since the present harmful methods obtain, it is evident that the younger the pupil the more deleterious the effect. Although, even after we shall have succeeded in avoiding these injurious influences by the adoption of the proposed reform, it will not be advisable on other grounds to begin writing at an age in which the child has not attained the necessary freedom and co-ordinate motion of arm and hand. The teaching of writing to children up to the age of eight years meets with difficulties that cause both teacher and child unnecessary vexation, which, however, at a later age are not encountered. The time thus spent in useless exertion could be effectually employed by the instruction of such work the nature of which is more in conformity with the anatomo-physiological capacities of the child. When writing is taught later it insures, to begin with, a better handwriting. It would be far more effectual if children began writing only after they can read both print and script fluently.

In order to counteract the deleterious effect of writing upon the spine. I have projected this peculiarly bent board (Fig. 7) by means of which I hope to modify the injunction to lie on a straight board which is still unfortunately recommended by many orthopaedic surgeons. The desire to rest the fatigued back and to correct the tending, faulty curvature of the spine cannot be gratified by lying on a straight board, because such position is straining, bringing the spine into an abnormal instead of a normal form, of course with other faults resulting than those caused by wrong sitting posture. In order to attain the desired object it is necessary that the stretching or tense condition of the entire body be obviated by the flexion of the knees and the normal curves of the body must be taken into consideration, that is, by supporting the cervical and lumbar curves. A hard board of this form seems softer to the body than an entirely even plane covered with a soft mat. The conditions of this board are so arranged that by moving a small neck-pillow, or a wooden neck support, it renders it serviceable for pupils of various sizes. It is, of course, only intended for small private schools or girls' schools.

We shall now consider the optical means required to enable those pupils, who on account of ocular conditions are compelled to approach the book too closely, to read and write at the proper distance and in the proper position. Investigations of oculists meet here with apparent contraditions which they attribute to the pupil's faulty tendency to approach the book too closely. It is to be observed that these pupils enjoy very accurate vision at a very long distance, and should be able to read with ease, at the proper distance from the book, while they insist, nevertheless, that this is not possible for them to do. The reason for this contradiction I evolved by means of measuring numerous crania which I published 1902 at the session of the Scientific Investigators at Carlsbad. In my address there I designated briefly, as angle B, that angle, which is formed by the axes passing through the centre of rotation of the two eyes, or the axis of the muscle cone (Muskelkegel). i. e., the cone formed by the ocular muscles originating around the optic foramen. The dimension of this angle depends upon the form and position of the orbits, as well as the form of the skull and varies with the latter.

The size of the angle formed when the visual axes meet at a given distance, depends in different individuals upon the angle B, i. e., the more the orbits diverge, the higher a convergence effort is required in order to effect a meeting of the visual axes at the desired distance. According to the accepted relation existing between the act of convergence and the effort of accommodation of each individual eve. it follows. that too great a convergence strain, as is the case when the angle B is too great, must necessarily be accompanied by a too strong accommodation effort, which adjusts the eye for a nearer focus than the one desired, causing bad vision at the desired distance, resulting, in children with too great an angle B, necessarily in approaching the book nearer and nearer until they adapt themselves to their near point, instead of the prescribed reading distance. This elucidation defends the pupils against an unjustified charge.

Now how can we render them the means by which they can see without strain at the proper distance? It must not be done with concave lenses, be they ever so weak. I have suggested the prism as the only means which is practical and also physiologically correct. As is well known a prism diverts light rays passing through it towards its base. By using weak prisms as spectacles, base inward, we reduce the angle at which

the two visual lines should meet by diverting the light issuing from the point of fixation, thus reducing the effort at convergence and at the same time the accommodation strain; thus, we are enabled by these spectacles to reduce the strain occasioned by the large angle B to a normal tension, enabling the child to see clearly at a normal distance also. Since an abnormally increased accommodation results in apparent myopia which in passing school life results in an actual, constantly increasing one, and since I recognize in the wearing of prisin glasses during reading and writing the only remedy, I wish to suggest that this measure be recognized as one of the most important of school hygiene.

Also in the investigation of myopia for statistical purposes. I would urgently recommend the use of prisms, which so far have not been employed for this purpose, but by which a marked source of error can be removed. At present atropin is resorted to in order to distinguish real myopia from the apparent myopia caused by spasm of the accommodation muscle. The objections to the use of this drug are: 1. It is very disagreeable to the patient and disturbs the progress of instructions. 2. Its application can be and by rights should be dispensed with, thereby avoiding irregularities in our statistical results, and last, through the use of this drug we, no doubt, remove momentarily the accommodation spasm, but the effected paralysis of the accommodation and dilatation of the pupil do not insure an accurate result of the refraction of the eve in its natural state. It is totally otherwise in the employment of prisms, which, after allowing the patient to use them a few moments for distant vision, will reduce the ciliary spasm without detriment and permit an accurate determination of the refraction. From this will develop the fact that a large per cent. of the near-sightedness in children of the primary grades is only apparent near-sightedness, while in a few the opposite. far-sightedness exists.

Under the title of "Scheinbare Kurzsichtigkeit bei ubersichtigem Bau und Akkommodotionskrampf"* I reported a case in Graefe's Archives 42 years ago, which demonstrated this effect of prisms, and since then I have taken much interest in the practical application of prisms and their combinations with other glasses and must urge their use extensively. While the simple prism suffices in all cases of slight and apparent near-sightedness, it is necessary in those cases which, after

^{*}Apparent myopia in hypermetropic eyes and accommodation spasm. (Translator).

the ciliary spasm is reduced, show a degree of myopia which interferes with erect sitting, to combine the prism with such concave lenses as will correct this fault. The full correction of myopia with minus lenses for distance, which is now recommended by many ophthalmologists, my experience does not approve of, at least not during school life and work, nor without combining them with prisms or decentring them to a like degree. There are exceptions where the constant wearing of minus lenses for distant vision may be recommended in those cases where the pupillary distance is small and the skull narrow, indicating a small angle B, and when no evidences of cilliary spasm, nor hereditary predisposition for myopia exist.

Hereditary predisposition, in my opinion, applies only to that relatively very small number of cases in which the external and internal characteristic modifications of extreme degrees or myopia are detectable in the eyeball itself in early childhood. In the ordinary cases that concern us in considering school hygiene, however, I do not find a hereditary predisposition in the eyeball itself, but in the form of those skulls which, on account of marked diverging orbits, increase the angle B which in turn causes myopia and which, I trust, can be prevented with prisms. The bone construction and the form of the skeleton seem to me to play the main role in the similarity as well as the heredity of structural peculiarities. The bones, especially the calvarium, exert admittedly a considerable influence upon the mental and psychic characteristics.

If in such anomalies as near-sightedness and lateral curvature of the spine we find that we meet with sharp hereditary impediments in the osseous structure of the body, we must not on account of these allow ourselves to assume a fatalistic standpoint, but must on the contrary, with increased energy, forestall by hygienic measures the evil, despite unfavorable predispositions.

THE CHARLATAN OCULIST, JOHN TAYLOR.

With a Scarce Portrait.

BY MORTIMER FRANK, M. D., S. B., (MASS, INST. TECH.), CHICAGO.

Ouackery has been defined by Dr. Parr as being applicable to all who, by pompous pretenses, mean insinuations, and indirect promises, endeavor to obtain that confidence to which neither education, merit, nor experience entitle them. world is peopled by two classes of beings, who seem to be as cognate and necessary to each other as male and female. Charlatans and dupes exist by a mutual dependence. There is a tacit understanding that whatever the one invents, the other must believe. All bills which the former draws, the latter comes forward at once and honors. One is Prospero, the other his poor slave. Caliban. The charlatan tricks himself out in a mask, assumes a deep, hollow voice, and struts upon the stage, while the dupe sits gaping in the pit, and takes every word that drops from the rogue's mouth for gospel truth and genuine philosophy. It would really seem as if the two parties had entered into a solemn compact, that whatever the one exhibited as charlatan, the other, by an absolute necessity, agrees to be present as simpleton. Let the rogue open shop to dispense pills, the simpleton, as soon as he learns the fact, hies to the place of trade, and, pouring down his pence on the counter, takes his box of specifics, and walks complacently awav. The knaves seem to consider the world as a rich parish—a large diocese of dunces, into which they have an hereditary and prescriptive right to be installed. They are never at rest until they have some subject on which to hold forth in public: some novel doctrine running against the grain of the old good sense; some antiquated sophism dressed in a new suit, to be put forth to surprise and startle the community, and gather around it (as a gay adventurer) an army of disciples. These men constantly assume an attitude of battle."

Among the long list of celebrated charlatans of the early part of the 18th century was the "Chevalier," John Taylor, as he styled himself, whom, with two other mountebanks, Mrs. Mapp

and Ward, Hogarth has condescended to immortalize in caricature.

John Taylor, the son of a surgeon and apothecary, was born in Norwich, England, August 16, 1703. Early in life he was apprenticed to an apothecary in London, and there received his first knowledge of the eye by his studies under William Cheselden. Taylor was possessed of considerable skill as an operator, although his methods of advertisement were those of a charlatan. He was accustomed to make bombastic orations before performing his cures. These were couched in what he called "the true Ciceronian, prodigiously difficult and never attempted in our language before." For more than thirty years he continued his itinerant method of practice, making London his headquarters, but visiting in turn nearly every court in Europe.

Heralded by such handbills as the following, which is a literatim copy, our quack made his entry into a town.

"Northampton, Saturday, Dec., 19. To-morrow being Sunday, the 20th, (as usual on that Day)—the Gentlemen,—the Ladies.—the Clergy, and all of Literature and Distinction, are hereby invited.—at six in the evening, at the Great ROOM. at the Red-Lyon, to a Phisico-Theological Declamation in Praise of Sight,—design'd both in speaking and action, agreeable to the Rules of ORATORY—The SYLLABUS,—will be given free to all present, and the whole will be free.—By John TAYLOR.—Doctor of Physick—Oculist to the King of GREAT BRITAIN—Fellow of several colleges of Physicians. etc. Being a Specimen of a Course many Years given in the several Universities, and the several Courts Abroad.—London. Edinburg—and lately at Dublin. The GENTRY are invited every morning to see his METHOD of restoring SIGHT, etc. -At six on Monday evening next (the 21st instant) he will certainly give the Lecture on the Alterations of the EYE, etc. -When the Eye will be dissected, and all its various Beauties displayed, in the Order of a Work lately published in Octavo. with plates, at EDINBURG. Notwithstanding the Many who usually attend on this Occasion, the ROOM will be so regulated that every Person present may see the several Parts of the EYE accurately examin'd."

Having cast his shadow before him, "the doctor appeared dressed in black, with long light flowing ty'd wig; ascended a scaffold behind a large table raised about two feet from the ground, and covered with an old piece of tapestry, on which was laid a dark-coloured cafoy chariot-seat with four black bunches (used upon hearses) tyed to the corners for tassels.

four large candles on each side of the cushion, and a quart decanter of drinking water, with a half-pint glass, to moisten his mouth."

His addresses, so-called, on the "Eye" were merely fantastic play of words and never descriptive of its anatomy. On one occasion he addressed the students of Oxford in the icllowing key:

"The eye, most illustrious of the muses, most learned Oxonians, whose fame I have heard celebrated in all parts of the globe—the eye, that most amazing, that stupendous, that comprehending, that incomprehensible, that miraculous organ, the eye, is the Proteus of the passions, the herald of the mind the interpreter of the heart, and the window of the soul. The eye has dominion over all things. The world was made for the eye, and the eye for the world.

"My subject is Light, most illustrious sons of literature—intellectual light. Ah! my philosophical, metaphysical, my classical, mathematical, mechanical, my theological, my critical audience, my subject is the eye. You are the eye of England.

"The eye is the husband of the soul!

"The eye is indefatigable. The eye is an angelic faculty. "The eye in this respect is a female. The eye is never tired of seeing; that is, of taking in, assimilating, and enjoying all Nature's vigour.

"The eye is the Orator of Nature, and talks the language of the universe, of all beneath the moon, of all above it. It talks the language of Heaven too; it renders useless all sounds except the tender moanings of lovers, those turtle cooings of desire, those nameless throbbings of fruition; these are the genuine dictates of the broken raptures of the soul, which she scorns to shape into words; nor can she lose time in so base a labor.

"We owe the ladies to the eye, those transcripts of the angels. those specimens of future bliss, those fountains of Joy, those dainties of desire, those cordials of all human care, who people the earth with their energy, and the sky with inhabitants; these patterns of purity and love, these master pieces, these lucky hits of Heaven, are the finest regale for the eye of man, where it feasts on the ruby of the lips, the vermillion of the cheek, the snow of the forehead, and the cherub in the eye; and yet even these are but the signs, the invitations held out of that extatic, that soul absorbing—but language is too weak."

Our quack was the author of a very extraordinary work,

which was dedicated to his son. John Taylor, Ir., who followed in his father's footsteps. The full title of this singular volume is. "The History of the Travels and Adventures of the Chevalier John Taylor, Ophthalmiater: Pontifical-Imperial and Royal—The Kings of Poland, Denmark, Sweden, The Electors of the Holy Empire—the Princes of Saxegotha, Mecklenberg, Anspach, Brunswick, Parme, Modena, Zerbst, Loraine, Saxony, Hesse Cassel, Holstein, Salzbourg, Baviere, Leige, Bareith, Georgia, etc. Pr. in Opt. C. of Rom. M. D.—C. D.—Author of 45 Works in different Languages; the Produce for upwards of thirty Years, of the greatest Practice in the Cure of distempered Eves, of any in the Age we live—Who has been in every Court, Kingdom, Province, State, City and Town of the least Consideration in all Europe, without Exception. Written by Himself.—This work contains all most worthy the Attention of a Traveller-also a Dissertation on the Art of Pleasing, with the most interesting Observations on the Force of Prejudice: numberless Adventures, as well amongst Nuns and Friars as with Persons in high Life: with a Description of a great Variety of the most admirable Relations, which, though told in his well-known peculiar Manner, each one is strictly true, and within the Chevalier's own Observations and Know-Interspersed with the Sentiments of crowned Heads. etc., in Favour of his Enterprises; and an Address to the Public, showing, that his Profession is distinct and independ ent of every other Part of Physic. Introduced by an humble Appeal, of the Author, to the Sovereigns of Europe. dressed to his only Son. Oui Visum Vitam dat."

In the Dedication the Chevalier says, "My dear Son, can I do ill when I address to you the story of your Father's Life? Whose name can be so proper as your own, to be prefixed to a work of this kind? You who was born to represent me living, when I shall cease to be—Born to pursue that most excellent and important profession, in which I have for so many years labored to be useful—Born to defend my cause, and to support my fame. May I not presume, that you, my son, will defend your father's cause?—May I not affirm, that you, my son, will support our father's fame? After having this said, need I add more than remind you—That, to a father, nothing can be so dear as a deserving son—Nor state so desirable, as that of the man who beholds his successor, and knows him to be worthy.—Be prosperous—Be happy.

"I am, your affectionate Father,

THE CHEVALIER JOHN TAYLOR."

His style here is no less bombastic nor inflated than in his lectures.

"I had the happiness to be also personally known to two of the most amiable ladies this age has produced—namely, Lady Inverness and Lady Mackintosh; both powerful figures, of great abilities, and of the most pleasing address—both the sweetest prattlers, the prettiest reasoners, and the best judges of the charms of high life, that I ever saw. When I first beheld these wonders I gazed on their beauties, and my attention was busied in admiring the order and delicacy of their discourse, etc. For were I commanded to seek the world for a lady adorned with every accomplishment that man thinks desirable in the sex, I could only be determined by finding their resemblance—

"I am perfectly acquainted with the history of Persia, as well before as since the death of Thomas Kouli Khan; well informed of the adventures of Prince Heraclius; was personally known to a minister he sent to Moscow in his first attempt to conquer that country; and am instructed in the cruel manner of putting out the eyes of conquered princes, and of cutting away the eyelids of soldiers taken in war, to make them unfit for service.

"I have lived in many convents of friars of different orders, been present at their creation to various degrees, and have assisted at numberless entertainments upon those occasions.

"I have been in almost every female nunnery in all Europe (on account of my profession), and could write many volumes on the adventures of these religious beauties.

"I have been present at the making of nuns of almost every order, and assisted at the religious feasts given on those oc casions.

"I have met with a very great variety of singular religious people called Pilgrims.

"I have been present at many extraordinary diversions designed for the amusement of the sovereign, viz., hunting of different sorts of wild beasts, as in Poland; bull-fighting, as in Spain.

"I am well acquainted with all the various punishments for different crimes, as practiced in every nation—been present at the putting of criminals to death by various ways, viz., striking off heads, breaking on the wheel, etc.

"I am also well instructed in the different ways of giving the torture to extract confession—and am no stranger to other singular punishments, such as impaling, burying alive with head above ground, etc.

"And lastly, I have assisted, have seen the manner of embalming the dead bodies of great personages, and am well instructed in the manner practiced in some nations for preserving them entire for ages, with little alteration of figure from what they were when first deprived of life.

"All must agree that no man ever had a greater variety of matter worthy to be conveyed to posterity. I shall, therefore, give my best care to, so to paint my thoughts, and give such a dress of the story of my life, that tho' I shall talk of the Great, the Least shall not find cause of offense."

One is struck by the lack of faith in which the medical profession was held during the early part of the 18th century 10t only by the common people, but by the nobility and crowned heads. During Queen Anne's reign, London abounded in oculists, one of whom she knighted. Taylor was not so fortunate, but his mountebank methods made him oculist to George II, and other crowned heads of Europe.

He even tried his skill on Gibbon. Sir Horace Walpole writes to Sir Horace Mann, "I need not desire you not to believe the stories of such a mountebank as Taylor: I only wonder that he should think the names of our family a recommendation at Rome: we are not conscious of any such merit: nor have any of our eyes ever wanted to be put out." He made great pretensions to learning, but Johnson declared him "an instance of how far impudence will carry ignorance." About 1767 he finally quitted England, and after visiting Paris, died in a convent at Prague in 1772. He is said to have become blind before his death. Taylor was the subject of many satires and pasquinades, among which may be mentioned, "The Operator; A Ballad Opera," and "The English Impostor Detected, or the Life and Fumigation of the Renowned Mr. I-. T-." Taylor was the author of numerous treatises on the evc. and in various languages, mainly filled with accounts of cures effected by him.

Though Taylor is allowed by Dr. W. King in his Political and Literary Ancedotes to have possessed professional talents, yet his strange farrago, which he calls the History of his Travels, shows him as a charlatan and coxcomb.

OBSERVATIONS ON DIONIN.

BY CHARLES M. STEELE, M. D.

BATTLE CREEK. MICH.

Dionin, having been rather obscurely before ophthalmologists during four years, is still not widely known, many prominent in the profession not using it at all, or if using it giving it only casual mention. The writer has used dionin two years and finds for it an exceedingly useful but limited field. drug should be used with patience, and not condemned upon a single unsuccessful trial. It occurs to me that some of dionin's most enthusiastic adherents (Darier, Paris, Hinshelwood, Glasgow) have brought the drug into partial disrepute by straining its range of satisfactory usefulness, and advising it where other agents less alarming are quite equally efficient. In episcleritis, keratitis, iritis and iridocyclitis, holocain affords satisfactory analgesia with no startling edema. Darier warns against placing the solution immediately in contact with the cornea, and drops it in the lower cul-de-sac. my hands, however, it has produced the same enormous edema and inflammatory condition; because at the patient's first wink. the drug is as completely spread over the cornea as though placed directly upon it, and the excess allowed to gravitate to the cul-de-sac. Within ten minutes the eye is intensely injected, and the cornea is partly submerged by the overhanging edematous conjunctiva. This very annoying feature, together with the brief length of time the drug is effective (2-3 days) lessens its attractiveness to those inexperienced in its usc. However, there are two general conditions in which no other known drug can compare in results. One is the various degrees of corneal opacities from recent keratitis, and the other which I have not seen mentioned by anyone, is that of hemorrhage into the conjunctiva or into the anterior chamber. Hemorrhage into the conjunctiva from blows on the eve. or from straining, is rapidly absorbed in the sharp reaction incident to its use..

Case: Mr. H., merchant, came to office a year ago with deep

and extensive hemorrhage into the conjunctiva, caused by a blow on the eye. Two drops of a 5 per cent. solution of dionin were instilled five minutes apart. The reaction was most violent. Patient went home, and returned next morning delighted to find effused blood nearly all absorbed. Have since used dionin in similar cases and have even injected one and a half centigrammes into the lower lid in cases of "black eye" with rapid absorption.

SO-CALLED GUMMATA OF THE CILIARY BODY.

BY N. T. WEILL, M. D.

PITTSBURG, PA.

These manifestations of acquired syphilis are amongst the most common. They appear in what is generally known as the second stage of syphilis. Last fall two cases of this nature came under my care which were to me instructive because of the tolerance of large doses of iodid of potassium in both, and their difference in the resistance of the sclera to the inflammatory process.

In the one, a male of 25 years, who as a matter of course denied syphilis in any of its phases, there was a swelling m the upper temporal posterior ciliary region of the left eye, fully one-half cm. in all diameters above the level of the surrounding sclera. The sclera over this protuberance did not appear thinner than on the nasal side where there was no elevation. Anti-syphilitic treatment gave a perfect result as far as I was able to see.

The second case, a man of 28 years, presented a swelling in the upper posterior ciliary region, also of the left eye, which was not by far as marked as in the preceding case; nevertheless the overlying sclera was exceedingly thin if not entirely wanting in two places. In this case enucleation had been advised. Under anti-syphilitic treatment the inflammatory process apparently entirely subsided. While the sclera was weakened in those situations where it was so very thin, the contour of the eye is not disturbed and the tension is normal.

The rapid happy issue in both instances I ascribe to the large doses of iodid of potassium and mercury used by these patients from the start, besides the semi-weekly use of hot baths and sweats with pilocarpin muriate (grain one-fourth hypodermically). In both cases teaspoonful doses of a saturated solution of potassium iodid were administered after each meal, from the beginning, and in a few days increased to 12.0 grammes after each meal and at bedtime, without any interference with the digestion. Of the unguent, hydrarg. ciner. 2.0 grammes was well rubbed twice daily for three days, the hot bath

and pilocarpin sweat were given, and then the mercurial dosage was doubled.

Anti-syphilitic treatment will do much in syphilis. One must not be hasty in suggesting operation, as this second case well teaches

How different the resistance of the sclera in the man of 25 and in the one of 28 years. Possibly this is due to the lessened elasticity of the sclera through age, or perhaps to individual pecularities of the patient, since the tumor was situated in both instances in approximately the same portion of the ciliary body.

REMOVAL OF THE LENS IN HIGH MYOPIA.*

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When removal of the lens for the relief of high myopia was first suggested, it struck me at once as a reasonable and beneficient proposition. During the past nine years I have removed the lens nine times for the improvement of this condition, and so far nothing has occurred to change this prepossession.

Very high myopia is as yet comparatively rare in the Southern United States, where the population is largely agricultural, fairly homogeneous and for the most part American for three or more generations. Another reason why I have not operated more frequently, is that I believe the cases in which we can conscientiously recommend operation must be carefully selected.

From the first, the prophylactic value of the operation so occupied my attention as to exclude from consideration any benefit that might accrue to confirmed victims of the disease. I mean that my imagination at once pictured all the good that might be done to an adolescent, whose M. had already reached or passed twelve D., by a simple and safe procedure, long thoroughly understood by all ophthalmologists, because of its common employment in many conditions. On the other hand, my own and others' bitter experience in the performance of serious operations upon middle aged or elderly myopes made me recoil from pursuing a path so frequently crossed by disappointment and doubt.

When, during the meeting of the ophthalmological section of the American Medical Association in New Orleans last year, this subject came under discussion, I was surprised to find that many distinguished confreres had been regarding the

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matter from a different standpoint, and practiced a method which seemed to me needlessly hazardous, sometimes upon cases from which I should have expected little and dreaded much. One or two of these distinguished fellow practitioners, after doing me the honor to visit my clinic, and seeing one or two of the cases herein reported, were very gracious in their expression of approval. It is this which has emboldened me to bring the subject to your consideration by this modest contribution in the hope that discussion by this learned body may aid in fixing the real value, proper limits and best methods of an operation, which marks a great, indeed the only radical advance, in the treatment of a most unhappy condition.

Let us consider first the case of a middle aged or elderly myope. In such a case, although the M, may be sixteen D. or more, should the pathological changes be confined to the development of a conus only, glasses in all probability will give vision quite satisfactory to the patient; at all events, the disease will have done its worst, and is not at all likely to be progressive, or at the most, very slowly so. Here removal of the lens is not to be thought of; even at forty the expectation of life is already diminished and the chances of serviceable evesight lasting out the patient's remaining years are excellent. From now on, in almost any walk of life, the patient will probably with each year lead a less exacting, a more and more sheltered life. At any rate, the nature of his employment will have been the same for many years past, and we are in a position to see that it has produced no very dreadful consequences. We may safely await the actual appearance of cataract, should it ever come, before suggesting an operation, that may be a risky one, entailing pain and discomfort, dislocation of fixed habits, confinement to bed and his room and loss of income during this period. And just herein lies another very important consideration in determining whether or no we shall advise operation. Although observation of the course of traumatic cataract has convinced me that discission, if carefully done, may often be safely and efficiently practiced long past the arbitrarily fixed age of twenty-five or thirty, nevertheless, it will hardly be denied that at thirty-five it begins to be doubtful. and becomes impracticable at forty or over. By that time the lens has become hard enough to make absorption tediously slow and the dangers of iridocyclitis and glaucoma great. Extraction, then, is the only operation that we can recommend in this class of cases, and extraction of cataract, let alone extraction of the clear lens, in an eye already myopic, is certainly an operation to be risked only under the spur of neces-

sity. Again, in extracting the transparent lens, what method shall we adopt? If we choose moderate preliminary discission in the hope of enjoying later the advantage of having an opaque lens to deal with, a long experience with this method of treating immature cataract has taught me. that not only are we most likely to be disappointed in the degree of opacification that will have taken place by the time injection and pain force us to proceed with the extraction, but that we then labor under the disadvantage of having to extract from an irritated eveball instead of from a quiet one. The sudden advent of glaucoma, the great difficulty of clearing away all cortical debris, and the probability of a long post-operative struggle with iridocyclitis, occlusion, and even exclusion of the pupil, all render the operation dangerous, and its after treatment long and trying to both operator and patient. Nor is the plan of thoroughly breaking up the lens and its subsequent evacuation through a peripheral incision a whit more attractive. again the suddenness and severity with which iridocyclitis or glaucomatous symptoms may set in, even in young persons, where only a rather free discission has been made, is well illustrated in cases No. 1 and No. 4, herewith reported. When such accidents occur in persons of middle age or over, and in eves more or less damaged by a long standing M. of excessive degree, they may cause us more than a bad quarter of an hour. There then only remains as an alternative the extraction of the transparent, lens at the first sitting, and in spite of its difficulties this is the operation I should choose: though, I am happy to say, I have never been obliged to perform it for this purpose. While this may be accomplished safely and beautifully by operators of extraordinary skill (see case of Dr. Robin here appended), yet it seems to me undeniable that in the hands of the average operator it must prove vastly more dangerous than an ordinary extraction. The difficulty of so completely removing all cortex as to insure prompt and painless healing, with a permanently open pupil, is so great that lavage will probably have to be resorted to, to secure such a result; the prolonged manipulations will greatly increase the traumatism and the risk. I once had to remove first one, and later the other, spontaneously dislocated lens from the anterior chamber of a young girl afflicted with high M., and in spite of using every precaution, and having each time performed an operation which appeared to be highly successful, inflammation reaction destroyed both eyes.

Now, if all this be true of a class of cases we have been considering, namely, persons of middle age, or over, afflicted

with an excessive M., to be sure, but with one that has produced no worse consequences than some impairment of vision and a moderate conus, how much more dangerous must the operation be when performed under far less promising conditions? I mean upon persons middle aged or elderly, whose excessive M, is associated with disease of the chorioid, with fluid vitreous, together with, perhaps, true posterior staphyloma. Has not the experience of each and all taught us how beset with difficulties and dangers is the extraction of senile cataract in such cases? Have we not all seen instances in which extraction had been practiced uselessly—I had almost said 'ruthlessly-upon such unfortunates? Is, then, the extraction of the clear crystalline to be recommended under like conditions, unless necessitated by most imperative reasons? And yet, owing probably to the operation being still regarded too exclusively as a last resort, this is a class upon whom it seems to be often practiced. Small wonder that the frequent happening of detachment of the retina and other lamentable sequelæ should, in the eyes of many, have cast upon a truly bold and helpful operation an almost unbearable reproach.

But when we turn to consider the remaining class, the class of young or comparatively young people, whose M., though excessive, has brought about as vet no pathological condition. how different the picture! How beneficial the results; and how simple the means by which they may be obtained! The future of a young person between the ages of ten and twenty. already afflicted with M. of twelve D., or more, is almost certain to be a dark one. We know that the malady will almost surely progress and bring with advancing years unhelpable blindness or a purblindness almost as bad. We are now almost as certain that the removal of the lens can stop all this and endow these children with a vision clearer and wider of range than they could otherwise ever hope to enjoy. The history of our oldest cases, and above all, the noteworthy case of Harlan (appended hereto), seems now to assure us of this beyond peradventure. These in the hey-day of youth, anxious to see, to experience, to learn all the new of life, are those who will receive with the greatest delight the improvement of vision bestowed. The sweeping aside of the veil that was gathering before their eyes ere they become accustomed to see, as though a glass darkly, men as trees moving; before a turning away from chosen pleasures, pursuits and ambitions, has either dulled or embittered, is the renewal of hope for many. Who among us has not been surprised at the apathy, nay, the antipathy, with which some elderly myope has received for the

first time a glass doubling or more than doubling his vision? How seldom do we perceive such a state of mind in the young! And these results are to be obtained, not by the risky plan of rapidly breaking up the lens, and afterwards extracting through an incision in the limbus, but by the safe and well understood method of careful, repeated discissions. For the first, though the more speedy and therefore the more showy method, entertains suffering, and the dangers of iridocyclitis, infection, longer healing period of the larger wound, and, even in young people, glaucomatous rise of tension. Any one can readily imagine the miserable month spent by the surgeon in conducting to moderate success such a case as No. 1, and even then the suffering and mutilation inflicted and the deformity of the eye resulting were truly lamentable; while in case No. 4 the pain of the patient and the anxiety of the surgeon are not to be lightly regarded. It is bad to lose an eve upon which an operation to restore sight has from necessity been made: but to be instrumental in destroying a well-seeing eve by an operation submitted to solely upon our recommendation, and by reason of the confidence a fellow creature reposes in us. is indeed a calamity that must give us pain. But if restraining our impatience for the sake of safety, we proceed by gradual discissions, how small the risk, how triffing the pain inflicted. If we make, as we should in all cases, our first discission cautiously, of small size, so that we may have the chance of seeing how the eye will tolerate this traumatism: and then waiting till every trace of injection and irritability has disappeared, make our next attack upon rather bolder lines, we shall have the satisfaction of conducting our case in almost every instance, if not cito, at least tuto et jucunde to a truly brilliant result. At worst we shall have the consciousness of knowing that we have done our best possible to lead the patient safely and painlessly to the goal for which he set out, solely upon our confident recommendation.

I submit, therefore, that there are three classes of myopes for whose benefit the operation of removing the lens may be considered:

1. Extreme myopes of elderly or middle age, in whom the pathological changes do not exceed the production of conus. In these the operation is unnecessary except for particular reasons, as in our case No. 2. They can usually be assured of useful vision, that will outlast the remainder of their lives, by properly adjusted glasses. As a rule, the danger of the extraction will outweigh the benefits conferred, for these per-

sons will be least appreciative of the improved vision that may be obtained.

- 2. Extreme myopes of elderly or middle age, in whose eyes extensive pathological changes have taken place. Here the operation is virtually contra-indicated. Only exceptional and imperative reasons should lead us to undertake it. The dangers of extraction are very great.
- 3. Extreme myopes between the ages of ten and twenty-five years of age. The prophylactic value of the operation is very high, for without it the patient is almost surely doomed to a purblind middle and old age. The operation can be very safely and painlessly done by cautiously repeated discissions. Vision is usually at once greatly improved as to kind and degree. Length of time is not to be considered in comparison with the horror of destroying a healthy, useful eye in an attempt to improve vision or obviate a danger that the patient may never live to encounter. It should never be forgotten that the patient consents to such an operation without motive of any kind other than our recommendation and the faith he reposes in us. One eye only should be operated on at a time, and a long interval should elapse before we allow ourselves to operate upon the fellow eve; so that every opportunity may be afforded to judge of the degree and permanency of the result. We have good reason to believe that the benefits conferred are permanent1.

CASES

CASE 1. White school girl, aged twelve years, of good general health, came to the clinic January 14th, 1895. She cannot see well unless she brings things very close. Cannot tell when she first noticed this. Has had glasses, but they did not give satisfaction. V., R. E.=4/200, with 20 D.s=20/50; L. E.=5/200, with 18 D.s=20/50, doubtfully. Ophthalmoscope shows pronounced conus in each eye. She was placed in charge of one of the assistant surgeons, who gave potassium iodid, gr. 10 t. i. d., and advised removal of right lens.

January 25. Atropin in right eye.

January 30. Pupil well dilated; the surgeon broke up the right lens thoroughly with the needle under cocain anesthesia.

January 31. Little reaction and no pain. Lens thoroughly broken up and opaque. Atropin instilled and ordered to be used twice a day at home. Tn.

February 6. Tn. Very moderate circumcorneal injection. Lens being absorbed above and below.

February 13. Same surgeon removed two-thirds of lens substance with Lippincott's syringe, but lost a little vitreous in so doing. Atropin and bandage.

February 14. Bandage very loose. Wound healed, but shred of vitreous in the wound. Eye painful last night. Atropin and bandage.

February 15. Iritis with hypopyon. No pain. Removed shred of vitreous. Ordered atropin and hot bathing every hour.

March 26. Eye too soft and flushing readily. Pupil occluded and iris drawn towards incision made February 13.

April 18. Free iridotomy. Anterior chamber filled with blood.

May 5. Blood not quite absorbed; iridotomy closed. For two days after the last iridotomy the eye was very painful.

July 8. Dr. Bruns made iridotomy down and inwards, at right angles to stretched fibres of iris, with small von Graefe knife, under chloroform anesthesia.

July 9. A small opening in the iris remains, but there is still some obscuring membrane behind it.

August 5. A second and more extensive iridotomy at same spot, discissing the obstruction and enlarging the coloboma, is made, under chloroform by Dr. Bruns.

August 6. Anterior chamber filled with blood. Ordered frequent bathing of eye.

August 13. Blood beginning to clear away.

August 24. Blood has disappeared. No vision.

September 8. No blood in anterior chamber. The false pupil, situated down and inwards, almost round and about 2/16 of an inch in diameter, looks clear. V.=6/200.

October 29. V., R. E.=15/200 with -3s.=20/50.

January 7. Glasses satisfactory. R. E.=20/50: L. E. 10/200. Can read Sn. 1 at eight inches with left eye.

This case seems noteworthy because:

- 1. It is the first of the kind reported from the far South, I believe.
- 2. It is evident that the operator made too free a discission at the first operation. In all such cases the first operation should be slight and tentative.
- 3. It was a mistake to have become impatient over the progress of absorption after the lapse of fifteen days only. The loss of an essentially healthy eye, having highly useful vision, as the result of an operation intended to improve that vision,

must be regarded as an unmitigated misfortune. In such a case the element of time should be allowed no consideration: the safest, and only the safest method, is to be followed. There is no doubt. I believe, that discission is far safer than any of the methods of extraction, and so long as absorption is progressing favorably no effort at extraction, either with or without suction or washing, should be undertaken. It is to be remembered that in cases in which one or more discissions have been made the posterior capsule has, in many cases, been either penetrated or ruptured, and a corneal incision is likely to invite prolapse of the vitreous. In this case the posterior capsule was evidently intact, as no prolapse followed the incision, but in using the irrigator the nozzle was permitted to press too far backward and so caused the loss of vitreous. Great care must be taken in washing out cortex with this instrument to keep the point of the nozzle against the posterior surface of the cornea and allow the regurgitating fluid to do the work.

4. The three iridotomies made before success was obtained shows how much may be done in such cases by cautious perseverence and persistence. The failure of the first was due to its not being made at right angles to the direction of greatest The second and third were made by what, for lack of a better name. I and my assistants have been wont to cali the "somerset operation" (with Graefe's knife), elsewhere described. The first operation failed because the opening was too small and fine: false membrane (fibrin?) spread itself over the new pupil. The field of operation was small, and the execu tion of the maneuvre very difficult, but the last operation was successful by piercing and cutting the false membrane and by so enlarging the artificial pupil that the fibrin of the extravasated blood was not able to bridge it over and give rise to a new The very slow progress of such cases and the membrane. patience that must be often exercised in conducting them to a successful termination is well illustrated by the course of this case after the last iridotomy. It was twenty days before the blood was completely gone from the anterior chamber; thirtyfour days' before any vision was obtained; eighty-five days before the final result, 20/30 was had. We could never get the patient to read any ordinary sized print, at any distance, with any glass before the operated eye, though with -3 s. before the unoperated one she read Sn. No. 1 at eight inches; nor could we account for the phenomenon.

The operation for the removal of the lens in high myopia seems to me a most reasonable one and one that time and a

greater accumulation of experience should prove a most beneficent one. The progress of high myopia is, the pathological basis aside, according to all our theories, dependent upon the excessive use of the longitudinal fibres of the ciliary muscle or the excessive use of the extrinsic muscles in convergence: probably upon both. Removal of the lens at once abolishes accommodation and by suitable lenses we can remove the near point to any distance that we please, and so render the effort of convergence much less violent. In the case of a person with extreme myopia in one eve only, the other being but moderately affected, lenses which fully correct the defect of each eve are so dissimilar as to be unsatisfactory, ill-balanced, intolerable. By removal of the lens from the ultra-myopic eye, lenses of much the same strength can be used, general excellence of vision is much increased and comfort greatly promoted. such a case the patient will depend for near vision on the invopic eye, or a pair of spectacles can be arranged for near work, in which the near point of the aphakic eye is made by means of a convex lens to correspond with that of the moderately myopic one.

The foregoing case and the two following were published in 1898 and 1899 in Volumes XV. and XVI. of the American Journal of Ophthalmology. The comments made at the time are given unchanged as they illustrate the progress of personal experience with the operation in, what seems to me, a usefully instructive manner. The other cases are now published for the first time.

CASE 2. A white married woman, twenty-one years of age. red-haired, blue-eved, florid, large, and of good general appearance and health. March 16th, 1897. Patient plains that right eye has been troublesome for three From her description of the appearor more weeks. ance of the eve she has had attacks of ciliary irritation and hyperemia, with tenderness and pain. R.E.=20/c, L.E.=20/LXX.; there is now ciliary injection of right eye. Atropin is instilled in both eyes; ophthalmoscope shows in right eye high myopia, a myopic staphyloma to the temporal side of the disc, and atrophy and irregular distribution of the chorioidal pigment. Left eye is myopic, but otherwise normal. The refraction, under atropin, is found to be: R.E. = 16s-3c. ax. $15^{\circ} = 20/LXX.$; L.E., -3c. ax. $165^{\circ} =$ 20/XX. Discission of the lens of right eye was advised.

March 24, 1897. A moderate discission of the lens capsule was made under cocain by Dr. Robin, first assistant surgeon of this department. Atropin instilled.

March 25, 1897. Eve looks well: little reaction; no pain. April 7, 1897. Under cocain, Dr. Robin broke up lens thoroughly with knife needle. Atropin every three hours.

April 9. Some ciliary injection: no pain: no tension. Atropin continued.

May 1, 1897. Eve free from irritation: lens thoroughly broken up and being absorbed slowly. Atropin continued.

June 2, 1897. Patient can see to count fingers with right eye. Another thorough an experience of the count fingers with right

June 5. No reaction. Continued atropped.

July 6, 1897. All cortical substance absorbed, some capsule remaining in pupil. Vision R.E.=20/cc.

An incision was made in corneal margin with keratome and the capsule removed with forceps. Slight escape of vitreous. Atropin and a pressure bandage.

July 9. Wound healed; some reaction. Atropin every four hours and hot water bathing.

July 14. Very little injection remaining; no pain.

July 10. Eve looks well. Vision with+1s.=20/LXX.

December 14, 1897. Vision R.E.=20/c, LE. 20/xx doubt fully. Right eye, no redness; pupil oval, with long diameter horizontal. Javal shows: R. E., + 3 c. ax. 105°=20/L., L. E., -1.50 c. ax. 165°=20/xx, and the patient is discharged improved.

December 20, 1898. More than a year after the operation, patient was seen again. The right eve looks the same: there is no injection; the eve has not become more enlarged or prominent; the pupil is black and oval in shape; there is no pain or tenderness, nor has there been since she was discharged a year ago. Vision, R.E.=20/cc; +3 c. ax. 105°= 20/LXX, practically the same as it was upon discharge, making allowance for difference of place and illumination. There is slight ex-and hypophoria. An ophthalmoscopic examination shows the media clear and the chorioid and the staphyloma about as they were a year ago.

This patient seems to me to have been benefited decidedly. In the first place, at the expense of a simple, and but slightly painful operation, she has been entirely relieved of the recurring attacks of pain with injection in the right eye, a condition that was greatly incapaciating her and rendering existence more or less miserable at the time she applied for relief. It is impossible, moreover, to foretell to how evil a state, to what pain and loss of time this progressive myopia with recurring ciliary hyperemia might finally have led. second place, the entire relief of the right has greatly improved the vision of the left; it has mounted from 20/LXX. without a glass, when first seen in December, 1897, to 20/XXX. in December, 1898. At the same time, it must be remembered that this failing, irritable and irritating eye has been converted into a quiet and stable one, capable of affording a very useful degree of vision should a calamity at any time overwhelm its fellow eye. All of this tends to confirm the favorable a priori opinion I had formed of this operation, and which I expressed in reviewing my first case, reported in this Journal (October, 1898, page 313).

CASE 3. E. K., a mulatto girl, twenty-two years of age, of good general appearance, came to the clinic on March 9th 1897, complaining that she was "very near sighted." Vision R.E.=5/cc, L.E.=15/cc. Javal's instrument shows in R.E. 2 D. ax 75°, L.E. 2 D. ax 90° R.E. with -16 s.-2 c. ax. 165°=20/c, L. E., with -16 s.-2 c. ax. 180°=20/L. The ophthalmoscope shows a pronounced posterior staphyloma in each eye. The removal of the right lens is advised. Patient placed in charge of Dr. E. A. Robin, the first assistant surgeon of this department.

March 19. Dr. Robin did, under atropin, a small discission with a Knapp needle.

March 20. No reaction; no pain; lens cataractous; atropin. April 2, 1897. Lens being rapidly absorbed.

May 5, 1897. Under cocain thorough discission with a von Gracfe knife.

May 7. Eve looks well; atropin freely.

June 9, 1897. Very little cortical remains; needled thoroughly. Capsule seems loose in pupil.

July 3, 1897. Large piece of capsule in pupil hanging over into the anterior chamber. Advise its removal.

July 6. V., R. E.,=20/c, with+2.50 s=20/LXX., L. E.=15/cc, with glass =20/L.

July 16. V., R. E.=20/LXXX., and no glass; improved. Discharged.

There can be no doubt of the great improvement in this case. An eye affected with progressive myopia and posterior staphyloma, to which a -16s.-2 C. could only give a vision of 20/c., is in four months' time, by an operation, causing neither pain nor the loss of a day from the ordinary vocations, brought up to a vision of 20/LXX. without any glass—almost double the vision given by the best possible glass before operation. Moreover, we have every reason to believe that we have removed the causes that were acting to produce a gradual but inevitable loss of sight. Does the average extraction of the

lens for senile cataract, does iridectomy in glaucoma do more? I believe strongly in the future of this operation, though until it shall be well established that no remote ill effects follow, I should prefer to operate upon one eye. In the three cases upon which I have operated up to this time I have chosen the worse eye of the two.

Here the case of Dr. H. H. Harlan (Atlanta meeting of the American Medical Association, Section on Ophthalmology, Journal American Medical Association, June, 1896, p. 184) should not be forgotten. A woman forty-five years of age had the misfortune to lose her left eye by progressive myopia. At the age of thirteen, however, she had had the good fortune to have an injury to the right eye, causing traumatic cataract and ultimate absorption of the lens. Thirty-two years afterwards, at the time the vision of the left eye was lost, the sight of the right eye was 20/L without any glass and there was no fundus trouble apparent. Would an early operation, asked Dr. Harlan, have saved the left eye? In the light of this case, I firmly believe so.

Case 4. T. B., white servant girl, aged 16, of good general health. From the age of 5 years her eyes have been weak, and she cannot read well. On February 18, 1899, atropin was put in both eyes:

R. V. (a)=20/70 with—14 D. S.=20/50.

R. V. (a)=20/70 with—14 D. S.=20/50.

Ophthalmoscope; marked conus: M=15 D. S.

Advise discission of lens for myopia.

March 1, 1899. Under cocain discissed anterior capsule of lens.

March 2, 1899. Very slight reaction.

March 8, 1899. Under cocain made a thorough discission of lens.

March 9, 1899. Some reaction. Pupil dilated one-half.

March 10, 1899. Pupil dilated to the maximum; injection moderate; no pain. The lens is thoroughly broken up and a good deal of cortical has escaped into the anterior chamber.

March 18, 1899. Progress satisfactory.

March 21, 1899. Yesterday, at 5 p. m., she began to complain of pain in the eye, and of the eye running water. She had headache and vomiting all night and this morning. The pupil is dilated; there is ciliary injection, and T.=+2. Performed paracentesis of the anterior chamber, removing a good deal of cortical substance. Bandage.

March 21, 1899. At 8:30 p. m. was called to the patient's home and found her suffering, with the tension high. Per-

formed paracentesis with keratome and evacuated a great deal of cortical substance, giving immediate relief.

March 22, 1899. Eye looks better. Ointment of mercury and belladonna on forehead.

March 30, 1899. Doing nicely; absorption going on rapidly. April 13, 1899. R. V.=20/100. About one-third of the pupil is clear.

May 9, 1899. R. V = +3.50 D. S + 2 c. ax. $120^{\circ} = 20/30$.

June 20, 1900. In R. E. performed discission of thin wrinkled capsule dividing it vertically.

June 22, 1900. No reaction; doing very well.

June 24, 1901. R. with +3 D. S. $\bigcirc +1.50$ c. ax. $120^{\circ} = 20/40$. L. V.=20/100 with -14 D. S.=20/50.

July 3, 1902. L. E., under cocain, made moderate discission. R. V. with +3.50 D. S.=20/30.

July 5, 1902. Doing well.

October 23, 1902. Under cocain, thorough discission of lens.

November 3, 1902. Doing well.

February 23, 1903. Absorption going on well and nearly complete.

May 13, 1903. R. V = 20/70 with +4 D. S = 20/40.

L. V = 20/70 with +4 D. S = 20/40.

December 4, 1903. R. and L. with +3.50 D. S.=20/30.

R. and L. with +7 D. S.=Sn. No. 1.

When this patient first came to the clinic her unaided vision was only R.=3/200, L.=20/100. The course of the two eyes after the operation illustrates well the great advantage of proceeding slowly and cautiously.

CASE 5. L. N., a mulatto school girl of 12 years of age, came to the clinic on November 4, 1902. She says her sight has always been poor. R. V.=20/70. L. V.=20/70. Under atropin, R. with — 10 D. S.=20/70, L. the same.

November 20, 1902. Under cocain discission of left lens.

November 21, 1902. Pronounced reaction; pupil not dilated; anterior chamber not fully restored; lens becoming opaque. Atropin frequently and continue bandage.

December 1, 1902. Doing well.

January 24, 1903. Nothing left but some capsule occupying part of the pupil. L. V. (a) without a glass, =20/70.

February 25, 1903. L. V=4/200 with +7 D. S=20/40. Advise operation on the other eye.

March 5, 1903. Moderate discission of right lens.

March 6, 1903. Complains of pain; some reaction.

March 14, 1903. Under chloroform, made incision upward

and outward with keratome, and evacuated cortical matter.

March 16, 1903. Much injection; pupil round and well dilated, the anterior chamber being restored. Continue bandage.

March 11, 1903. Discontinue bandage. Order argyrol 10 per cent. every three hours.

June 1, 1903. R. V. with + 6.50 D. S.=20/30. L. V.=the same.

November 25, 1903. R. V.=20/100. L.=20/70. Both pupils are perfectly round, black and clear. R. V. with + 6.50 D. S.=20/50. L. with + 6 D. S.=20/40.

CASE 6. F. B., a white school boy, aged 14, came to the clinic September 5, 1902. He says that his eyesight has been poor ever since he can remember. R. V.=20/200.

September 19, 1902. Under atropin, R. V.=4/200 with -6 D. S.=20/200. L. V.=4/200 with -13=20/70.

January 15, 1903. Under cocain, made discission of left lens cautiously.

January 20, 1903. There is no reaction and only a small opening in the anterior capsule of the lens.

April 23, 1903. Thorough discission of left lens.

April 21, 1903. Doing well.

June 13, 1903. L. V. with +4 D. S.=20/50.

March 2, 1904. R. V.=8/200, and with the best glass only 20/100. L. V.=20/100, and with +3.50 D. S. $\bigcirc +0.75$ c. ax. 90° =20/30, with +6.50 D. S. $\bigcirc +0.75$ c. ax. 90° he reads Sn. No. 1, at 14 inches.

The Javal instrument showed R. 0.50 ax. 90°; L. 1 ax. 90°.

CASE 7. C. F., a white clerk, aged 21, was admitted July 23d, 1902. For eight years he has known that he does not see well. R. V.=20/200. L. V.=20/200. Under atropin, each eye required —14 D. S. V.=20/60. Advised removal of one lens.

August 21, 1902. Made moderate discission of left lens under atropin.

September 11, 1902. Discission of capsule in left eye.

November 12, 1902. Absorption seems to be at a standstill. December 4, 1902. Under cocain, made free discission of

December 4, 1902. Under cocain, made free discission of left lens.

January 16, 1903. Has not been here for a week. The pupil is contracted and full of cortical matter.

March 3, 1903. Absorption going on nicely.

July 21, 1903. L. V = 16/200 with +5 D. S = 20/50.

After this the patient did not return.

Dr. E. A. Robin's Case of Dislocation of Lens into Anterior Chamber in High Myopia, Recovery after Removal with Scoop.

R. H. McM., aet. 34, lumber checker by occupation, came to the clinic on March 23, 1901, complaining of defective vision, and a bulging of right eye, interfering with complete closure of lids. We found a large equatorial staphyloma of right eye, the vision reduced to light perception. The left eye was found, under atropin, to be highly myopic, the vision with correcting lenses: —13s — 2.50 c. ax. 15° being only 20/LX. Vision without glasses 20/CC. Javal showed an astigmatism of 3 D. axis 120°/30°.

We ordered above correction for left eye worn constantly and advised enucleation of right eye.

March 29, 1901. Right eye enucleated under chloroform with no accident.

April 6, 1901. Patient discharged improved.

May 7, 1901, or a month later, he returns complaining of intense pain and total loss of vision in left eye, coming on suddenly on previous day. We found severe injection of ciliary region, pupil dilated to maximum, tension enormously elevated, the lens dislocated into anterior chamber. Vision is reduced to faint light perception. Under cocain we immediately proceeded to remove the lens with scoop, and succeeded only after losing a large quantity of vitreous; eye was bandaged securely. Two days later, removed bandage; eye doing well; healing process progressing favorably; atropin and bandage. Bandage is removed every other day and atropin instilled; progressing nicely.

On May 22, fifteen days after operation, we find corneal wound healed with small prolapse of iris; counts fingers at four feet. Bandage continued.

May 28. Applied actual cautery to prolapse of iris under cocain and bandaged.

June 5. Eye looks well. Vision with +7s +3c. ax. 180° =20/XL; with +10s +3c. ax. 180° = Snellen No. 1.

July 15. Javal ophthalmometer showed 12 D. ax 170°. L. E. V.+4s +8c. ax. 170°, 20/XL with +4s added to this glass=Snellen No. 1. Ordered these glasses in reversible frame for far and near. Discharged two days later decidedly improved.

Published in the New Orleans Medical and Surgical Journal, March. 1902.

This case was seen two years after the operation, and the condition of the eye and of vision remained the same.

Drs. Würdemann, Murray and Black of Wisconsin, U. S. A., from

a study of their own and collected cases (see the Annals of Ophthalmology, April, 1899, and Transactions of the section on opthalmology of the American Med. Assn. at its fifty-fourth annual session, held at New Orleans, May, 1903) arrive at much the same conclusions as I have from my limited experience with the operation, and from the side light thrown by twenty years of experience in private and hospital practice in the extraction of cataract in complicated cases, in the ripening and extraction of unripe cataracts in the extraction of wounded or dislocated lenses and in the correction of the refraction and muscle balance in myopias of all kinds and degrees.

TREATMENT OF THE ACCIDENTS OF INFECTION AFTER THE OPERATION FOR CATARACT.

RV

Dr. A. Bourgeois, of Rheims.

Translated from the French.*

BY

W. M. CARHART, M. D., of New York.

There is certainly no more disagreeable experience than the surgeon meets when he finds at the first raising of the dressing on a cataract patient that the eye has become infected. I have practiced a respectable number of operations for cataract; nevertheless I cannot escape a distinct uneasiness the day I verify for the first time the result of my intervention, even if the patient has made no complaint.

On this point, I have always before my memory a patient who had not acknowledged the least pain in the three days following the operation, and yet on the first dressing the eye was found in an advanced stage of suppuration, and lost forever. Since that time I have made it my rule to dress my cataract cases the second day after extraction. Also, I change the dressings after twenty-four hours whenever the least doubt can arise by reason of the condition of the external ocular adnexa (for example, dacryocystitis, even though treated and supposedly cured).

The first rule to follow, in my opinion, is then to examine an eye the day after the operation, if the patient is suffering, or even if there is the least ground for suspicion; and in every case the dressing should be changed for the first time the second day after the operation. This renewal of dressing is to be performed in the patient's room, by a feeble illumination (candle or small oil lamp); with the greatest precaution the lids should be but slightly opened, and experience enables one to see instantly and surely if anything wrong has occurred.

^{*}La Clinique Ophtalmologique, October 10, 1904.

It is at this time only that treatment of the accidents of infection can be effectual; a little later intervention becomes problematical.

It is then absolutely indispensable that the surgeon act in time, that he revisit the patient himself, and that he do not trust this first visit to any other, whether an associate or assistant, however well qualified.

Before indicating the treatment which I prefer I wish to reiterate that I do not speak of prophylaxis before and during the operation. It is with design that I do not dwell upon this question. To-day it is admitted that all cataract operations are performed with the most absolute respect for the rules of asepsis and antisepsis. Thanks to this strictness, operations complicated with panophthalmitis have become more and more rare. Nevertheless, all operators can count one or two operations in every hundred compromised by accidents of infection. and I do not fear to state that this formidable termination will never be entirely suppressed. In truth, it breaks out often in patients who absolutely could not be suspected; while we may obtain good success in diabetics, in ozena cases, etc. For the majority of these instances, it is perfectly impossible to find an explanation. We must then count occasionally upon this complication, and it becomes necessary to put oneself in readiness to combat it.

One does not to-day meet with those fulminating forms of suppuration with which our predecessors were acquainted, and which rapidly terminated in a purulent liquefaction of the eyeball. In general events occur with less explosive violence. More often the infection is intraocular; it is only secondarily that the corneal wound is infiltrated.

For the past six years I have not seen a single instance of suppuration clearly commencing in the cornea. The outbreak of the infection always comes from the interior of the eye. All of which leads me to believe that this complication is almost solely endogeneous, that it ought to be put most often to the credit of the soil, that is to say, of the patient. We do, for example, five or six operations for cataract, one after the other, taking scrupulously the same precautions for each of them; it happens that only one of these operations becomes complicated by infection, without it being possible to discover a cause.

It is, however, none the less true that for the patient and his environment, the surgeon is responsible, and it is he who is blamed. Very seldom is the same surgeon asked to operate on the second eye when he has had to deplore the loss of the first in consequence of panophthalmitis.

We meet with two kinds of septic accidents. Those which originate in the cornea appear in the 24 hours following the operation; they are the most serious. Those which begin in the uveal tract show themselves from the fifth to the eighth day; they are less serious, are susceptible of cure, but terminate in the loss of the eye if not arrested by the appropriate treatment. In every way the surgeon should be extremely careful, and he cannot be unless he has the patient under his control.

The infective agent is apparently the same in all cases, acting with variable virulence according to the number of the colonics and the nature of the soil.

The only active therapeutic means is the method of sub-conjunctival injections of mercury, preferably the cyanid. In the several years since this method made its appearance I have used cautiously in panophthalmitis several drops of a 1 1,000 solution, as others have done, and that without any result. Reflecting that the eye was seriously involved, lost perhaps, and that there was little risk in being bold, I have decided to make free use of these injections. Here is how I proceed in every case: I prepare each week a 1-1,000 solution thus compounded:

Cyanid of mercury, gr., .01 Distilled water, gr., 10.

When this solution is not utilized for the injections, which often happens, happily, it is put in use for the next service.

To practice the injection, the patient is placed upon the operating table, Cocain is instilled. Elsewhere an amount of the cyanid solution is gradually poured into a glass equivalent to the injection one wishes to use (at least ½ c. c. m.); four drops of a 1-20 cocain solution are then added. An assistant separates the lids. The patient looks downward. With a fixation forceps with dull teeth and without a spring we seize a good fold of the conjunctiva near the external canthus. In this fold we thrust the needle to a depth of a centimetre and a half until we meet the external wall of the orbit, Then the needle is brought towards the eyeball, and we push the piston of the syringe gently, varying the position of the needle up and down.

The injection, thus practiced, is not very painful, thanks to the cocain. If we have a very serious case, the first injection being made in the morning, a second injection similar to it should be performed the same evening. In cases of less grav-

ity four or five injections in all arrest the march of the infection, but in cases of great severity we must go as far as seven or eight injections. The chemosis produced is considerable; but when the infection has been controlled, the characteristic pains, which the patient more often localizes around the eye and at the top of the head than in the eye itself, are mitigated, and this lessening of pain indicates when the injections can be suspended. Chemosis by itself causes great discomfort, but not agony which can be confounded with those pains emanating from the infectious process. In this desperate struggle we must not stop for the complaints of the patient. If he cannot endure his suffering, we can prevent or allay it by subcutaneous injections of dionin in the temple.

Treatment is completed by instillations of atropin, in need by periorbital inunctions of mercury and belladonna, a classical medication upon which there is no need to dwell here. The treatment of the corneal wound consists in galvano-cauterization, and better yet, curetting of the ulcer. Dressing with iodoform, aristol, and above all airol, freely used. Renew the dressing at least twice a day.

General Treatment: Light diet, milk regimen, purgatives, and if there is need, antipyretics (sulphate of quinin, antipyrin, etc.).

To be complete, I will mention the use of the anti-strepto-coccic serum of Marmorek, which I have used in one case by hypodermic injections in the dorsal region, but without any result. This serum may perhaps have a preventive action; but we do not know enough about it to impose this form of vaccination upon all cataract patients.

Here, then, are some observations of cases; presented very much in resume:

1. V. M. G—, 69 years, operated upon for cataract in the right eye, June 7th, 1878, by simple extraction Easy operation, docile patient. In the previous history nothing but attacks of articular rheumatism. The fifth day infectious iridocylitis, hypopion, violent pains Sub-conjunctival injections of 3/4 c. c. m. of cyanid; the next day and the day after 1/2 c. c. m. Lessening of pain, June 15th. Then all returned little by little in order. The cornea resumed its transparency and the corneal incision remained intact. The pupillary field was obstructed by exudates. Little vision. The 26th of July an irido-capsulotomy was done. Three months afterwards, excellent vision with plus 3 D. for far (the patient was myopic) and plus 15 D. for near.

- II. Mme. H—, 60 years. Operated upon for cataract in the right eye by simple extraction, June 25th, 1901. Good operation, quiet patient. Arthritic and somewhat diabetic (10 grammes sugar in 24 hours). The seventh day infectious iridocyclitis, hypopion, sharp pain. Paracentesis. Four days following, sub-conjunctival injection of $\frac{1}{2}$ c. c. m. of cyanid. The 12th of July all pain had ceased. Pupil occupied by thick exudate. The membrane became thinner of itself little by little; nevertheless, vision not being absolutely good, we performed an irido-capsulotomy the 10th of June, 1902. Several months afterwards, very sharp vision with plus 4 D. for far (the patient was myopic) and plus 10 D, for near.
- III. V. M. M—, 74 years. Very arthritic. Left eye lost in infancy. Patient restless and difficult to handle. Preparatory iridectomy done on the right eye. March 11th, 1902. Extraction of the cataract, May 27th, 1902. The next day, commencement of panophthalmitis with infection of the wound. He received successively six sub-conjunctival injections of ½ c. c. m. at a dose. The 14th of June, the infectious symptoms were arrested. There remained a leucoma occupying the upper half of the cornea. September 27th, iridectomy outwards. January, 1903, with plus 11 D. acuity of vision, equaled 1-20.
- IV. X. Mlle. M—, 70 years. Nothing noteworthy in her previous history. Operation for cataract of the right eye 14th of October, 1902, by simple extraction without incident. In two days a peculiar yellow appearance of the pupillary field. Moderate pains. The progress of infection was arrested after five injections of ½ c. c. m. of cyanid. November 7th, cornea is intact; pupillary occlusion complete. Some atrophy of the globe, but with little diminution of tension. Good perception of light. It will be possible to make an iridectomy when the patient, who still sees in the other eye, shall have so decided.
- V. Mme. M—, 63 years. Very arthritic. Conditions of existence very precarious. Cataract in both eyes. Pronounced ectropion of lower lid in each eye for a long time from lacrimal obstruction. Preparatory treatment of the lacrimal openings and operation for ectropion. Operation for cataract in the right eye February 17th, 1903, by combined extraction. Next day, severe panophthalmitis with infection of the wound. At the end of eight days the infection was arrested after seven sub-conjunctival injections of cyanid and light cauterization of the wound. In consequence, there remained a leucoma occupying the upper half of the cornea, the infero-internal portion

remaining clear. Pupillary occlusion. Good perception of light. July 28th, an irido-capsulectomy performed with the forceps of Vacher. Good result. The patient possesses actually an acuity of vision equal to 1-15 without a glass. She can manage to occupy herself a little in her house. The other eye remains to be operated upon for cataract.

VI. Mme. T—, 66 years. Excellent health. Severe contagious conjunctivitis for six months. Cataract operation of the left eye, January 26th, 1904, by simple extraction. Easy and docile patient. The next day symptoms of infection, moderate pain. Curetting of the wound. Daily injections for eight days under the conjunctiva of one-half a syringe full of cyanid. Pain diminished rapidly. All danger was passed at the end of ten days. March 21st, there remained an opacity of the cornea in the center and above. Clear at the periphery. Good perception of light. A possibility of doing an iridectomy in the future.

In conclusion, since the year 1898, I have treated and saved six eyes complicated by accidents of infection, after the operation for cataract. These six are the only ones I have had to record during that period, which constitutes a proportion of about one per cent. During the years 1899 and 1900, I have not had a single mishap.

If I restrict myself to the years previous to 1898, I can state that all cases of panophthalmitis terminated by exenteration of the globe. Very different are the results recorded in this paper. Of six patients, six have preserved their eyes. In two cases, the less serious, the restoration of vision has been complete, at the end of a certain duration of time, it is true, but patients prefer this loss of time to the loss of their eyes.

In four very severe cases, panophthalmitis was completely arrested. Certainly the functional result was not as brilliant as after a successful operation for cataract. But the patient much prefers to remain in possession of an even passable eye than to return home with a stump. The surgeon himself cannot but congratulate himself upon this termination, for there is nothing more lamentable than to be compelled to remove an eye which we have several days before benefited by a good operation for cataract. It is for this reason that it has seemed to me useful to publish the results that I have obtained.

CORNEAL LACERATION WITH CILIA IN THE ANTERIOR CHAMBER. PUPILLARY OCCLUSION. FOUR OPERATIONS. RECOVERY.

RV

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The following case came to Wills Eye Hospital in the service of Dr. Frank Fisher, by whom I was assisted in the treatment and by whose permission the following report is presented:

J. L., seventeen years old, male, miner by occupation, presented himself July 18, 1903, giving a history of having been struck in the left eye two days previously by a piece of coal. There had been no treatment since the injury.

Examination. O. S. V.=Fingers 1 ft.; marked ciliary injection with conjunctival congestion. Cornea clear except borders of a 4 mm. laceration, extending upward from inferior nasal limbus, axis 75°, which are swollen and hazy. The anterior chamber is shallow below, but of normal depth in the superior half. The iris, which is discolored, is incarcerated and protruding through a corneal wound and is covered with tenacious inflammatory exudate. Pupil measures $3\frac{1}{2} \times 4$ mm., axis 75°. The lens is seemingly clear, but no positive diagnosis can be made because of the intense photophobia. T-2.

The patient was admitted to the hospital, placed in bed, and iced pads were applied constantly. Atropin, gr. iv. solution, was instilled four times a day.

July 20, '03. Injection and irritation are somewhat lessened but prolapse of iris remains the same. Under cocain, the protruding iris was excised by close apposition of De Wecker's scissors to the cornea. The iris, not retracting into the chamber sufficiently, was withdrawn and excised above and below, to free it from the wound. Atropin was instilled and the eye was bandaged for six hours, then ice padding was resumed.

July 21, '03. Inferior half of cornea was clouded, but not rough. Anterior chamber was formed. The pillars of the coloboma were free but otherwise the opening was occluded by a yellowish gray exudate, the surface of which was covered by a thin coagulum. Pupil was very irregular, 3 x 41/3 mm.. axis 75°. There was no pain or discomfort.

July 29, '03. The eye was whitening, and the cornea clearing. Iris was almost of normal color.

A trace of hyphema still remained in the fully-formed chamher.

Pupil 2 x 5 mm, axis 80°. A distinct, gravish film filled the pupillary area.

August 3, '03. Cornea was cicatrizing below, with organization of exudate in coloboma and cornea. Some injection was present; otherwise the eve was quiet.

August 10, '03. Ice was stopped.

August 13. '03. A small infiltrated ulcer in the corneal cicatrix accompanied by increase injection was observed.

August 27, '03. The ulcer was healed. Eve white, cornea flat, axis about 75°, caused by 3 mm. grayish-brown cicatrical area. The iris is firmly adherent to the corneal scar and lens beneath, causing marked iritic tension and almost complete pupillary occlusion. Two cilia are visible for the first time in the lower outer quadrant of the anterior chamber and lying on the iris. Pupil 2½ x 4 mm., axis 75°. Under cocain a 3 mm. incision with a needle bent on the flat, was made 31/2 mm. from the temporal limbus in the lower outer quadrant.

A small partial iridectomy was made by drawing the iris outward with a blunt hook and excising with McClure scis-SOTS.

Two cilia were removed. Atropin was instilled and the eye bandaged. The result was a clear oval opening 1 x 2½ mm., axis about 90° to temporal side of the occluded pupil.

August 28, '03. Slight reaction was observed. Chamber was formed. Ice-compresses were applied.

August 31, '03. Marked conjunctival congestion with intense ciliary injection was present. Iridectomy still holds, showing clear lens behind, and distinct synechial attachments of pillars of coloboma. No pain. Treatment continued.

September 9, '03. Exudate was increasing upward and contracting below with incarceration of iris; lenticular haze is present, but the fundus is visible; disc outlined; last iridectomy still holds, some congestion continues.

September 16, '03. O. D. is irritable under atropin mydriasis; $V={}^{6}/_{60}$ with $S=2.50={}^{6}/_{5}$; ordered S=1.50.

September 29, '03. Almost complete obliteration of the anterior chamber was present because of swollen lens. Under cocain a 3 mm. incision was made 2 mm. from center of superior limbus with a bent needle.

The iris was withdrawn with a blunt hook and a small iridectomy was completed. The lens was curetted. Atropin was instilled. The eye was bandaged and the patient was placed in bed.

September 30, '03. Anterior chamber formed; corneal wound smooth; iris free; little reaction.

October 1, '03. Hemorrhage; cortex and capsule fill the pupil, which is $4 \times 5\frac{1}{2}$ mm. axis 90°.

October 12, '03. Eye whitening. Pupillary area still filled with exudate, cortex and capsule.

October 21, '03. The patient was discharged from the hospital. O. S. is white but very irritable; cornea showed cicatrices of two incisions and the laceration, but was clear in the center. Anterior chamber is deep; iris yellowish; pupil very irregularly oval, axis 90°. A thin yellowish membrane occluded the pupil. No red fundus reflex was observed. V=fingers 6 inches. T—1.

November 30, '03. Readmitted. Eye is white. Iris is almost of normal color, but is stationary because of almost complete posterior synechia. Anterior chamber is of normal depth. The pupil is irregularly oval, extending from the superior limbus slightly to the temporal side of the centre, downward to a mass of yellowish exudate 3 mms. from the inferior limbus, axis being 75°; pupil 4 mm. at its widest point, which is axis 165°. A dense brownish gray mass fills the entire pupillary area. Light perception and projection are good.

December 3, '03. Under cocain anethesia an incision was made with the bent needle between the cicatrix of the primary injury and that of the first incision of election. The point of the needle was forced through the dense, very resistant pupillary membrane, making an incision across the pupil about 5 mm. from the superior limbus. The capsular exudative mass then fell, but repeated attempts with blunt and sharp iris hooks and forceps failed to draw out the membrane.

A large bead of clear vitreous presented, and was excised. The operation was then discontinued. The result was a 4 mm. almost central pupillary opening. Atropin was instilled. A Liebriech bandage was applied, and the patient was put to bed.

December 4, '03. Considerable reaction followed. Slight bulbar edema and marked congestion were present. Cornea was clear except the infiltrated wound-margins, between which a cloudy string of hyaloid was observed. A thin, light brown exudate laid as a film on the anterior surface of the iris. Anterior chamber was fully formed. Pupillary opening was clear and the iris was markedly discolored. No pain. Treatment: ice compresses, stropin instillations and rest in bed.

December 7, '03. Little injection remained but the eye was easily irritated. Fundus details were distinctly seen with a high ous spherical lens.

December 15, '03. Discharged cured. The eye was white. The cornea was clear except for the above mentioned cicatrices. Anterior chamber was of normal depth. Pupillary openings show no tendency to contract. Pupil is now 4 x 5 mm., axis 180°. $V=\frac{1}{30}$; with S+12 $D=\frac{6}{6}$ full.

THE RELATIONS OF OPHTHALMOLOGY TO OTHER DEPARTMENTS OF SCIENCE.*

RV

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That ophthalmology has been given a place in this Congress of Arts and Science may be significant of its wonderful development in the last half century. But it is still more significant of the new conception of what constitutes a science. There was a conception of sciences that we might compare with the representation of States in a primary geography. Each had a distinct color—pink for Missouri, vellow for Illinois, green for Kansas, with strong black lines separating them. If the color of one passed the black line and smeared the other it was a grave blemish on the map. Receiving first geographic impressions from such a map, it becomes hard for the child to conceive that these arbitrary political divisions correspond to nothing in external nature. Lines equally distinct, equally arbitrary, equally unnatural, marked off from each the different conventional divisions of science. To a generation trained in the older conception of separated sciences, astronomy, chemistry, botany, physiology, the failure to recognize the traditional boundaries may seem a loose disregard of valuable landmarks.

But in thought, as in geography, across all conventional lines the streams run, the winds blow, the landscape extends toward the infinite, alluring horizon. Each individual student, from the little hill or the mountain he has climbed, looks out upon a panorama of facts the exact counterpart of which no one else can view. Yet he beholds the same region that others see from somewhat different standpoints; and the breadth of his perception is determined not by busy running to and fro, rather by the height to which he has climbed in his own proper domain for a viewpoint.

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The new conception of science recognizes its universal continuity; and, laying aside traditional boundaries, assigns to every definite, important human interest, dominion over the territory which lies nearest it. Such is the conception which recognizes a science of ophthalmology.

Ophthalmology centers in the function of vision; a gate-way—perhaps the most important gateway—between the objective and the subjective. From this center of its domain highways and bypaths go out in all directions, each leading to other domains of science, nearer or more remote. They run for a time fairly in the domain of ophthalmology, they end fairly at the center of some other science; but where they cross the border lying between, no man shall say. The time devoted to this address is to be used in pointing out a few of the salient features noticeable from this particular center of knowledge; in tracing the direction toward which the paths that center here extend, and in indicating a few things of especial value that we are able to offer from our cultivation of the field of ophthalmology, or hope to import from other fields of activity.

The central part of ophthalmology is the conversion of the light impulse into the nerve impulse, and this not in a single general act, but by a myriad of sharply differentiated actions. We receive through the eye not merely a uniform impression of general external luminosity. Through this gateway comes a message from each separate particle of the universe. The number of such messages perceptible is limited only by a most remarkable capacity for differentiating impressions. A thirty-thousandth of a square millimeter of retina is capable of isolating and preserving the identity of a particular sensation, and of appreciating a radically different sensation ten times in each second.

This ability of the retina to differentiate impressions is of value only when connected with a correspondingly minute accuracy in the assorting of the rays falling upon it; and this minute accuracy in the assortment of these rays depends on the perception of the dioptric apparatus of the eye. Its capacity for successive impressions depends on the rapidity of renewal of physical and chemic conditions—upon the perfection of its nutrition. To supply and maintain, by most delicate adjustments and compensations, these two things, the dioptric assortment of rays and the nutritive conditions of vision, are the essential purposes of the eyeball and its appendages.

On the one side ophthalmology extends to include the whole science of optics. Optical instruments are but artificial ex-

tentions of the organ of vision, conditioned by its limitations, of value as they serve it. On the other side, few processes of human physiology are without important bearing on ocular nutrition; and more distant processes, biologic, chemic and physical, throw light upon the problems of ocular nutrition. On the one hand we have the mathematic and physical phenomena of light; on the other the physiologic balance of health and the imbalance of disease.

Ophthalmology was developed from both sides. The physicist and the optician with lenses and more elaborate instruments endeavored to correct the imperfections and extend the usefulness of the dioptric apparatus. The physician traced and combated in the eve morbid processes similar to those that he dealt with in other organs of the body. There is still a reactionary tendency to split the field of ophthalmology along the old lines. From the side of the optician the desire for maximum immediate material results with a minimum of science; and from the side of the physician the unwillingness to overstep the traditional boundaries of a medical education. and train the ophthalmologist in mathematic and physical optics, still favor one-sided and partial studies and views of ophthalmology. The real unity of science, and the importance of the sense of vision in the line of modern civilization will. in the end, compel a view of the whole field from the true standpoint. But the opposing influences of a hasty commercialism, and a blind, if not fossilized conservatism, must be met by the assertion, and reassertion, clear and emphatic of the unity of ophthalmology.

Physics and Mathematics.— The two halves of the ophthalmic domain have been alluded to. Let us go into the relations of each of them a little more in detail before turning to special lines of thought that lead out toward the other domains of science. On the physical side of ophthalmology the general laws of refraction and the properties of lenses have been worked out nearly to the practical limit of minuteness. The exact changes in the dioptric mediums and surfaces of the eye, which occur with age, and in the act of accommodation, are still uncertain. This point at which physics and physiology come together is one of especial interest. More minute studies of both the physical conditions present in the crystalline lens, and physiologic processes which change them, may yield suggestions of wide applicability both in general physiology and in general physics.

That part of the physical side of ophthalmology concerned with the movements of the eyeball, which secure and maintain

binocular vision, has of late years attracted much attention. A voluminous literature regarding it has arisen, the bulk of which, to speak frankly, is worth very little. This literature exhibits with painful emphasis the general lack of a broad training among physicians, which leaves them unable to grasp and use to advantage essential physical and mathematic conceptions. The same defective training is also seen in the crudeness and inefficiency of physical methods that have been widely resorted to for the correction of imperfect physiologic adjustments. The unknown being always great, the surgeon, painfully aware of the limitations of his knowledge of physiology, seems to have placed a blind faith in mechanical readjustments, of the limitations of which he was still more ignorant

Fortunately, the importance of physiologic development for the perfecting of the function of binocular vision has been recently emphasized. Binocular vision is, comparatively, a late acquirement in the evolution of the race. The capacity for it is still rather liable to imperfect transmission from generation to generation. The instinctive reactions and efforts of the child in this direction often need to be guided, assisted and supplemented. A better appreciation of this evolutionary process and its recapitulation in the individual becomes the antidote for blind dependence on crude mechanical remedies.

Physiology.—Turning to the physiologic side of ophthal-mology, it may be noted with regard to the growth and nutrition of the cyeball that these are strikingly determined by inherited tendency, and are markedly perturbed only by accidental influences of the severest type. The great mass of eyes approach marvelously near to a normal standard, independently of use or of influences affecting general nutrition. This is illustrated in the retinal development of eyes the seat of congenital cataract; in the full growth of the eyeball among influences that stunt the general body growth, in the maintenance of function in spite of extensive wounds, and in the strong resistance to the extension of suppurative processes.

In view of the slight perturbation caused in the nutrition of the ocular tissues by moderate influences, it seems easy to understand why physiologic experiment upon the eye has thrown little light upon the normal processes of general nutrition. The influences of sugar and naphthalin in causing opacity of the crystalline lens remain after many years phenomena almost completely isolated and not well explained. The opportunity for the experimental study of pharmacology and of processes of nutrition which seemed to be opened by the discovery of the ophthalmoscope has so far proved rather disappointing.

Pathology.—The disturbance of the orderly course of nature within the eyeball is, however, only a question of the adequacy of the disturbing force; and causes capable of producing pathologic results may here be studied through the characteristic series of their effects. The transparency of the ocular mediums enables us to watch undisturbed the usual course of pathologic processes within the eye. This has been of highest value in giving exactness and definiteness to some of our ideas regarding pathology. In the way of contributions to exact knowledge of the processes of exudation and resolution that attend inflammation, and of advanced knowledge of vascular and nerve lesions, much must be credited to ophthalmology. Yet the opportunity it affords for the study of pathology, experimentally or clinically, has thus far been utilized by few, and along comparatively narrow lines.

General Medicine.—Ophthalmology has the closest relations with all other departments of medical and surgical science. The general tissues which make up the body at large also enter into the eye and its immediate surroundings. They are here liable to the same morbid changes, and in some measure require the same applications of therapeutic forces. The infections. acute or chronic, have their characteristic ocular manifestations. The degenerations may here be traced, many of them with more minuteness and from an earlier stage than is possible in any other organ. It would be easy to spend time in outlining these relations of ophthalmology which have been the subject of treatises on the eye in relation to general diseases. But it was the "Father of Medicine" who pointed out, "art is long and time is fleeting." Omitting any such general survey of matters which have already claimed considerable attention. let us trace equally instructive examples, a few of the newer or less commonly noted relations of ophthalmology.

Bacteriology.—Great interest attaches to observations that have been made in the region common to bacteriology and ophthalmology. The pathogenic action of microorganisms can nowhere else in the human body be so readily, directly and continuously studied. Already the known bacterial flora of the eye, both normal and pathologic, is a large one; and the characteristics and relationships of some of the organisms found there have been quite widely observed and commented upon. Valuable studies of the actions of bacterial toxins upon the living tissues of the eye have been made by Morax, of Paris, and Randolph, of Baltimore. But their observations

are so far from being conclusive that they call for additional investigations to reconcile them.

The identity or nonidentity of certain related forms, as the diphtheria and the xerosis bacilli, are of equal interest and importance to students of both sciences. The observation that the same clinical types of inflammation may be associated with the presence or unusual abundance of totally different forms of bacteria, as the pyogenic staphylococcus, pneumococcus, diplobacillus and xerosis bacillus, has been made by many different workers in this field. It raises the questions, what is the essential relation of these organisms to the inflammatory process, and is that relation necessary or merely accidental?

In the eye we have admirable examples of inflammation due to nonbacterial causes, like the retinitis following the excessive use of the eyes, or exposure to excessive light; the chorioiditis attending myopia; and the inflammations of the conjunctiva and lids due to eyestrain. Have such pathologic processes any necessary relation to bacteria whatever? What other processes resembling reactions to microorganisms may be reactions to unknown causes quite unrelated to bacterial invasion? It may be suggested that certain forms of ocular disease, such as "Parinaud's conjunctivitis" and "vernal conjunctivitis" ought to be carefully studied for a possible connection with microorganisms other than bacteria.

Neurology.—The relations of neurology with ophthalmology are so extensive and so intimate that the boundary between them would vary enormously with the taste or training of the individual who undertook to delineate it. "Die Neurologie des Auges," of Wilbrand and Saenger, has already reached some 1,500 pages and promises to extend indefinitely. Of the 18 pairs of cranial nerves, 6 are distributed partly or entirely to the eye and its appendages. Peculiarly intimate relations and analogies existing between the retina and the brain give to observations made upon the former a unique scientific interest and value. Then, too, the dependence placed upon the visual function in nearly all occupations and amusements gives it a predominant influence upon the general condition of the nervous system.

Fatigue, neurasthenia. excessive irritability, sluggish and defective development of the higher centers are likely to be very closely connected with abuse or defect of the visual function. The term eyestrain may be loose, indefinite and faulty, but behind it stands an entity of enormous scientific and sociologic importance. Those who have most strongly emphasized its importance may sometimes have betrayed narrowness of

view, and a disposition to reason from mere plausible hypotheses; but the known facts with regard to the influence of abnormal use of the eyes upon the functions of the general nervous system justify more general attention than has yet been paid to them.

Psychology.—In the motor and sensory phenomena attending eye-use and eye-strain, we have an open path to intimate experimental knowledge of the general nature and relations of nerve actions and states, both normal and pathologic; and may make the closest approach to objective knowledge of the phenomena of consciousness. One need have but a limited knowledge of ophthalmology and neurology to travel this path and bring back results of great value, as did Joseph Le Conte. Other similar investigations would yield additional matter of high interest for its relations to psychology. Close observations of form, as modified by lenses and prisms; and of color as modified by contrast, and preparatory treatment of the retina, are open to all normal-sighted persons. The careful study of these elementary perceptions must furnish an essential stone for the future edifice of mental science.

Th ordinary subjective tests of refraction, which occupy so large a part of the time of every practising ophthalmologist, furnish data which, carefully selected and arranged, would be of much importance in psychology. The response to the simple test of improving or impairing vision by a change of lens, shows characteristics constant for the individual, but which vary widely in different persons. The routine which anyone adopts in the subjective testing of ametropia furnishes the fairly constant conditions of experiment calculated to best bring out class types and individual peculiarities of reaction. Surely some ophthalmologist interested in this matter will place some of this material at the command of students of mental science.

Laws of Heredity and Congenital Variation.—Attention should be called to the fact that ophthalmology offers an important and promising field for studies of the laws of heredity. I have already referred to the tendency exhibited by the tissues of the eye to adhere strictly to type, in their development and in their resistance to accidental influences. Already enough has been observed to warrant the supposition that, in the eye, departures from the normal type are themselves apt to be typical. Take the well-known facts regarding congenital defects of color perception. The similarity of the disability in enormous numbers of cases, and the tendency to descend to grandsons, through the daughters only, are strongly typical. Such typical instances would seem to promise most for an elementary

knowledge of the laws of heredity—those laws which have the widest and deepest importance for the sociology of the future. It must be mentioned, however, that this law of descent through the female to the male does not apply universally. We have in ophthalmology enough groups of exceptions to quite limit and define its scope.

The range of ophthalmic observations already available in this direction is a wide one. The congenital anomalies of the eve and the individual peculiarities it may present, as to color of iris, pigmentation of the eve-ground, distribution of vessels. and especially anomalies of refraction, as well as the ocular diseases, have been well worked out, and they are capable of comparatively exact notation and record. Statistical studies regarding them, extending over family or race groups, can be relied on as giving facts of definite value. There are already accumulated many observations of great interest in this connection. The reversion to an ancestral type of pigmentation, in retinitis pigmentosa, the striking condition of amaurotic family idiocy, the predisposition of the Hebrew race to glaucoma, and of the negro to phlyctenular disease, and the comparative freedom of the latter from trachoma, lacrimal obstruction and strabismus, are instances of a long list of ophthalmic facts that will help to reveal laws of congenital variation and heredity.

Education.—From the field of ophthalmology we can bring suggestions of radical importance as to methods of primary education. The educative treatment of squint is truly an educational process; and of the simplest and most definite kind. How development of power and skill goes on under it may well claim the attention of the philosophic teacher.

In congenital word blindness, to which attention has been directed of late years by Hinshelwood and Nettleship, we have a suggestion of the obstacles that may lie in the way of the ordinary training of children. A bright, exceptionally successful teacher told me she had devoted three months to the attempt to teach an apparently bright and active boy, of over six years, the names of the first three letters of the alphabet, and had failed in that time to fix either of them in his memory. I have encountered two of these cases of inability to name the letters seen, although the alphabet could be repeated forward or backward by rote. In both of these cases, as in most of the other reported cases, this disability subsequently disappeared. Evidently there is a time to teach the alphabet, and a time not to teach it. In these cases the times varied widely from the normal standard. How many other mental capacities are there,

the development of which may be exceptionally early or long delayed? How often is the usual order of development reversed? The complexity of the relatively simple act of vision, its inability to render a certain service because of the retarded or imperfect development of a subsidiary power, should be enormously suggestive to the student of pedagogy.

The ophthalmic history of our schools enforces a lesson that needs to be remembered in every application of educational science. By the training given to and through an organ, and intended to perfect its powers, it is possible to render it functionally worthless. The connection of myopia with the educational process, of a certain kind, is as well established as the connection of chorioidal atrophy, retinal detachment and cataract with myopia. Then, too, the curriculum and conditions of study which leave the eyes of one scholar unharmed ruin the eyes of others. Will not the analogy between eye and brain carry over the ophthalmic observation, as another important suggestion to those who study the theory of education, and work out the educational schemes to which young persons are subjected?

Preventive Medicine and Public Health.—It requires no stretch of imagination to apply the observed facts regarding the deterioration of the eves during school life to the service of preventive medicine and public health. The separate statistical studies of school children's eves are now numbered by hundreds of thousands. Some are of much higher value than others. But taken together, they afford a broad and substantial basis for the conclusions: That as schools are now conducted throughout the civilized world, school life taxes the eve to near its full capacity for active work. That unfavorable influences, like insufficient light, uncorrected ametropia, or impaired general health, render the strain of school life disastrous, and cause the eye to be permanently damaged. merely the normal requirements of the body during a stage of rapid development, may cause breakdown under ordinary school work, with comparatively favorable conditions. that when working to near full capacity, individual needs and peculiarities must be taken carefully into account. The enormous aggregate of disability and suffering, brought about by disregard of these conditions of maximum effective work, make these studies of the eye under school life very important to those who labor in the field of preventive medicine.

These studies of the eyes of school children also have for those who study abnormal psychology the suggestive value of very definite and accurate observations in a related field. It is chiefly because of the analogies of eyestrain and brainstrain that we cannot admit extravagant claims for the influence of the former, in causing all the ills that the nervous system can manifest. If correction of errors of refraction will not prevent all sorts of neuroses and psychoses, the study of eyestrain and its prevention will throw as much light upon the nature and prevention of brain fag and nerve strain, as any line of study open to the worker for the prevention of such conditions, be he neurologist, teacher, or social reformer.

In another and quite different direction the straight course of the ophthalmologist, working at his daily routine, carries him into the domain of public health. The group of contagious inflammations of the conjunctiva, especially the still indefinite condition called trachoma, are of enormous importance for their bearing upon public health. Social customs, the regulation of immigration, and the economic and educational problems raised by blindness, are all intimately interwoven with the recognition and treatment of these diseases.

Training of the Worker.—Finally, an essential relation of each department of science to other departments, is the educational relation. This vast accumulation of observed fact and analogy, of connected cause and effect, this mighty web of interweaving generalization, which our Congress of Arts and Science attempts imperfectly to reflect—this huge phenomenon of modern science, is of value chiefly as it becomes possible to transmit it from generation to generation. It is the application of knowledge to the needs of men, and the answering of the questions which perplex them, that quickens it and vivifies it—that renders it prolific and immortal. Ophthalmology the science is vitally interested in the training of those who apply ophthalmology the art. The greatest service will be rendered to it and through it to mankind by that institution of learning that will establish a broad, well-planned department of ophthalmology for the thorough training, both optic and physiologic, of those who are to apply its accumulated facts and generalizations. The progress of ophthalmology is today seriously impeded by the lack of rounded education in all directions from its essential center.

Clearly it belongs among the medical sciences. It can continue to grow and prove fruitful only through its connection with their common educational root. But it differs from all other departments of medical science. And that difference, involving a good working knowledge of mathematics and skill in minute observations and delicate manipulations, requires that the specialization in the training for it shall be great, and

shall begin early. Difficulties in the way of the required specialization will suggest themselves to any one who has struggled with the problems of medical training. But many of them will disappear as the educational scheme is made to take its proper relation to the peculiar individual needs of each student. As we learn to furnish each growing mind conditions for its best development the difficulties of teaching a specialty will grow less. When we have given up that barbaric ideal of forcing a living consciousness into a set mold we shall get away from the notion that an ophthalmologist can be best grown in the region of general surgery, and when ready to bear fruit in that field can be safely transplanted to the outlying clearing of ophthalmic science, where he seems to be needed.

The process of obtaining educative material must be broadly selective. There must be selection on the part of the teacher and selection on the part of the student. We must learn the lesson that the achievements of the race outrun the possibilities of the individual. Even in the free atmosphere of thought, if we take some, more must be left unbreathed. Not that what is taken is of any better quality, simply that it is nearer and can be utilized by less waste exertion. So for each student certain things lie near at hand, within easy reach of his interest. They may be no better in the abstract, and yet they are better for him. To drag him away from them, to seek more distant mental pabulum, is to waste a part of his life. In this matter of education, economy of vital force demands that we respect the possibilities and limitations of the individual.

Upon a thousand fields of discovery, eager workers push back the ever-widening margin of the unknown. In a thousand laboratories crude fact, treated in the crucible of experiment, is yielding its gold of wisdom. Analysis opens all doors and probes all secrets. Meanwhile fancied boundaries and limits disappear, systems of philosophy fall to pieces, lie in historic fragments for a little time, and then are forgotten. But there are not lacking higher synthetic movements. On the one side becomes more and more clear, order, eternal and infinite. While on the other rises ever more dominant the developed thinker and worker—his union of knowing with doing, the human expression of a divine synthesis

AN OPERATION FOR ENTROPION OF THE LOWER EYELID.

BY JAMES MOORES BALL, M. D.,

ST. LOUIS.

Although there are several efficient operations for entropion of the upper eyelid, surgical measures heretofore advanced for the relief of a similar condition of the lower lid have often proved unsatisfactory. The writer has devised and practiced an operation which is comparatively simple, is efficient for the



Fig. 1. Modification of Desmarre's pince anneau.

relief of trichiasis and of organic entropion of the lower eyelid, and does not require excision of any tissue. The procedure consists of three steps:

- 1. Incision of the conjunctiva and tarsal plate;
- 2. Exposure of the lower margin of the tarsal plate; and
- 3. The placing of the sutures.
- 1. The writer's, or preferably, Ewing's modification of

Desmarres' pince anneau (Fig. 1) is applied, the base plate being in contact with the skin of the lid. An incision parallel with the lid margin is made at a distance of 2 mm. from the margin. It extends from a point 1 or 2 mm. external to the



Fig. 2. Position of the first incision.

lower punctum lacrymale to a point 1 or 2 mm. from the external canthus. In suitable cases this cut may be of less extent. The incision is made with a cataract knife or with a small scalpel and includes the conjunctiva and entire depth of



Fig. 3. Position of the first incision.

the tarsus. (Fig. 2). The cut is made obliquely, from behind downward and forward (Fig. 3).

2. The lid clamp is now released and is reversed, i. e., the base plate is applied to the conjunctival surface. An incision is made along the whole extent of the lower margin of the tarsal plate. (Fig. 4). The lower border of the tarsus is then

exposed by dissection and by retraction of the tissues. (Fig. 5 shows the position of the two incisions).

3. Three or four silk (English black, number 1), sutures are



Fig. 4. Position of the second incision. Retractors (not shown in the illustration) are used to separate the lips of the wound.

then passed. The success of the operation depends upon proper suturing. The needle is entered from the conjunctival surface of the first wound and is passed obliquely from behind

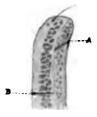


Fig. 5. Position of the first (a) and of the second (b) incisions.

upward and forward (Fig. 6). During this step the upper part of the lid should be held firmly with ordinary fixation forceps. The needle is then made to take a bite in the lower margin of the tarsus and, lastly, it is passed through the lower lip of the cutaneous wound. The sutures are then tied. The effect of tying them is to produce a renversement of the upper segment of the lid, the cilia being directed forward or

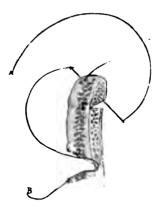


Fig. 6. Showing the method of suturing.

even forward and downward. The gaping wound in the tarsus heals by granulation. The sutures are removed at the end of four days.

REPORT OF FOUR CASES OF SYMPATHECTOMY.

By Frank L. Henderson, M. D.,

ST. LOUIS, MO.

Mr. E. H. S., age thirty-two, married, came to me on the 24th of July, 1900. He said that he found it necessary to get reading glasses fifteen years ago, and that for ten or twelve vears he had known that there was some other trouble with his eves. Three years ago he discovered by accident that he could not see as well out of the right as out of the left eve. went at once to a local oculist, who told him that he had glaucoma. From him he went to Dr. Michel of St. Louis and was treated for a year, during which year he had one acute attack of glaucoma. He was then examined by another prominent oculist of this city, who pronounced his case a hopeless one and advised him to prepare for a condition of total blind-In May, 1900, he consulted Dr. Ball, Louis, who did an iridectomy in each eye. The patient is a druggist by profession, and I found that he had read the subject of glaucoma quite thoroughly. Dr. Ball later advised the operation of Ionnesco. He claimed that his vision had been getting rapidly worse in the last few months and that it had failed considerably since the operations performed by Dr. Ball. When he came to me I found that he was wearing O. D. + 1.50 D. S.; O. S. + 1.25 D. S., which had been prescribed by Dr. Michel and approved by Dr. Ball. Upon examination I found two perfect glaucoma iridectomies. They were classical in every detail, and any failure to check the disease by this operation could in no way be attributed to a faulty execution of the operation. In the right eve there was total loss of central vision and very slight perception in the temporal field. In the left eye, vision was 6/40 with slight central dullness. Tension in each eye was about + 1 and the discs showed a distinct glaucomatous excavation.

On July 25th Dr. A. R. Kieffer performed a bilateral sympathectomy and the superior cervical ganglion on each side was thoroughly removed. Patient recovered from the anesthesia without any discomfort. I found the ocular symptoms to be those which usually follow the removal of the superior

cervical ganglion. The eves were suffused with tears: there was some conjunctival hyperemia, there was slight dysphagia and some dysphonia; tension was reduced in both eyes and there was a partial drooping of the upper lids. The patient had complained before the operation of a feeling of fullness in the eyes—a tense sensation, and reported immediately after the operation that this feeling had disappeared. On the 5th of August, examination of vision showed that the peripheral area of the field of vision of the right eye, in which objects were visible, had increased in size slightly. The left eye showed 6/40 vision. On the 18th of December, 1900, vision in each eve was the same as when last examined. Patient complained that when he ate or drank he felt sharp pain in the parotid region in the right side more than in the left. He said that a pickle would raise him from the floor. He had an area of anesthesia covering the ears, half of the cheek and the anterior part of the neck, as far back as the scar on each side, but not extending beyond the scar. Tension in the right was normal; tension in the left was slightly plus. The lacrimation was quite free at times: more from the right than the left. He had had no inflammatory attack and the full feeling in the eyes was entirely gone. He noticed a shrinkage in the size of the deltoid and trapezius muscles, but said that their size and strength was returning. On the 4th of November, 1902, vision was practically the same as two years before. The anesthesia remained the same; tension normal in both eyes. Shoulders and arms still weak and some slight trouble in swallowing fluids. cember 21, 1903. I received the following letter from the patient:

"My eyes are much stronger. The sight is not improved, but I can use them more than I could a year ago, and without bad effect. My health is fairly good, but cannot gain flesh When the operation was performed I weighed 170 pounds; when I got home I weighed 130 and have gotten up to 155—no higher; 170 was my weight for ten years before the operation. I can read any letter written as heavy as this one."

December 7, 1904, over four years and four months from the date of operation, the patient came to my office. V. O. D. was same as at previous examinations; V. O. S. was $^{6}/_{27}$ or a trifle better than at previous examinations. Tension in each eye normal. The fields of vision the same as at the time of the operation. Anesthesia of the face and neck nearly gone. Weakness in the deltoid and trapezius muscles has disappeared. He is able to read a typewritten letter and attends to his accustomed duties without feeling at any great disadvantage.

He has a serious pulmonary trouble, which can readily explain the inability to regain his former weight.

In the second case I not only have my own records, but I have the records of the oculist whom she consulted before seeing me. The patient, Mrs. K., age sixty-three, went to see an oculist of this city on January 27, 1902. At that time he found the vision of the right eye to be $^{20}/_{100}$ and no improvement with glasses; the left eye $^{20}/_{40}$ with + 1.25 D.S., $V=^{20}/_{30}$. His diagnosis was as follows: "Right eye, nerve pale; broad ring of atrophy, but not excessive groove. Left eye nearly the same." He ordered mercury and strychnia. February 10th, O. D.—.75 cylinder, axis 90, $V=^{20}/_{30}$. O. S.+ 1.25 D. S. - .50 D cyl. axis 90, $V=^{20}/_{30}$.

On February 20th he ordered organoferrin and strychnia tablets. On March 24th, vision in the right eye was $^{20}/_{75}$ and vision in the left $^{20}/_{40}$. Strychnia was increased. This is the last record I have of the oculist who treated her before I saw her. He evidently considered the case one of optic nerve atrophy.

On July 22, 1902, she came to me and I found simple chronic glaucoma in both eyes, pronounced excavation of the discs, tension + 1 in each eye, with dilated pupils and contraction of the nasal side of both fields. Vision in the right eve was ⁶/₄₀. I advised iridectomies at this time, but they were declined. I put the patient on the sulphate of eserin, 2 grains to the ounce. Her vision at subsequent visits varied very little: sometimes seeming to be a little better and at others worse. She did not use her eves at all and was closely nursed by her husband, who was very careful to see that the pupils were always kept contracted. At every visit I urged upon her the necessity for operative interference, but her husband was never willing to have it done. The patient came in to see me every few months, and under eserin, seemed to be holding her vision very successfully. On the 13th of May, 1904, after a long absence, she appeared in my office and I found that with the right eve she could only count fingers at 15 feet, and in the left eye, vision was 4/40. The right field was narrowed to central vision, and the left field considerably contracted, more on the nasal side. Her husband saw plainly at this visit that vision had greatly diminished since her last call upon me. I told him again that his wife would go blind unless something was done. I had explained the Jonnesco operation to him previously, and he looked upon it more favorably than upon any operation on the eye itself. They consented to have the Jonnesco operation done, and on May 14, 1904, under chloroform anesthesia, Dr. Kieffer removed both superior cervical ganglions. Following the operation, we had the usual symptoms—suffusion of the face, hyperemia of the conjunctiva, lacrimation, contraction of the pupils, drooping of the upper lids, some trouble in swallowing and in articulation. After the operation I was careful to see that no medicine was instilled into the eyes. The pupils remained contracted. I saw the patient every day for two weeks and then she went home. I called upon her at her home in June and learned from her very intelligent husband that the pupils had never dilated, the tension had never risen since the operation, and that she had more vision than at the time of the surgical interference.

October 13, 1904, she came to my office, and examination showed vision in the right to be about what it was before the operation, and vision in the left equal to $^5/_{40}$, which is a trifle better than before. The fields were roughly taken and showed no change. The pupils were less than normal in size and tension was minus. When I told her she had retained the vision she had at the time of the operation, she and her husband both insisted that it was better.

The papers on the "Relation of the Cervical Sympathetic to the Eye," presented to the American Medical Association at its 1903 meeting by De Schweinitz, Wilder, Ball and Weeks were so exhaustive that it seems almost impossible to offer anything new on this question. When a subject is worked up as comprehensively as this one was by the authors above mentioned, sometimes, instead of stimulating further investigation, the tendency is to discourage it. Excepting the valuable contribution of Loring, it is safe to say that this subject has been conspicuously absent from the pages of ophthalmic literature since the appearance of these excellent papers. Nevertheless, there are many vital questions regarding the relation of the sympathetic to the eye which are not settled. The preceding cases are offered in the hope that the features presented by them may be of some slight service in the final analysis. speaking of them as four cases of sympathectomy, the method of classification used by Wilder and others is followed. Speaking more definitely, they were two cases of bilateral sympathectomy.

Unvarying success cannot be expected of the best accredited surgical procedures, but the number of failures attributed to this operation is so large that we are forced to believe: (1) It is not based upon scientific premises or; (2) that its execution is faulty in some particulars; or (3) it has not been applied to properly selected cases. There are reasons for assuming that the disappointing results are due to the last two

causes. In considering the manner of performing the operation and the possibility of disappointment following faulty execution, two factors are presented:

- 1. The ganglion should be thoroughly removed and a section of sufficient length excised to prevent re-attachment.
- 2. The anatomic and clinic evidence seem to indicate that the operation should always be bilateral and that both ganglions should be removed at the same operation.

The operation is a difficult one and one which should be performed by a general surgeon. I do not mean that an oculist cannot do it, but if there is any good reason why the general surgeon leaves cataract operations to the oculist, the same should prompt us to relinquish this field to him. The deftness, the finesse, the delicacy of touch supposed to be essential to the ophthalmic surgeon, his unfamiliarity with free hemorrhage and the size of the instruments which he is accustomed to handle, all militate against him in an operation of this kind.

As the purpose of the operation of sympathectomy is to completely sever the connection between the eve and the sympathetic system, it would seem to be quite vital to know the exact anatomic nature of the sympathetic cord in the region of the superior ganglion. The superior cervical ganlion of the sympathetic system lies between the rectus capitis anticus major muscle and the sheath of the large vessels, at a point opposite the second and third vertebræ. It is a fusiform enlargement of the sympathetic cord. This cord communicates below with the middle cervical ganglion. Gray, in speaking of the communication between the superior and middle ganglions, uses the singular number in one place and the plural in another. In addition to the main cord of connection, Suker speaks of an "ascending branch of the middle ganglion which connects with the ascending fibers of the superior ganglion high up in the neck." In Poirier and Charpy I find the following: "If the intermediate cord which unites it to the middle ganglion is double, the ganglion is bifurcated below; moreover it is not rare to observe an analogous disposition at its superior pole. Its division into two secondary ganglions is sometimes met with, and Lobstein has presented a case which is classical. This duplication is a cogent argument in favor of the primitive multiplicity of the cervical ganglions and of their secondary fusion." Terry says he has met with more than one cord of communication between the superior ganglion and the rest of the sympathetic system above and below. This is mentioned for the purpose of calling attention to the possibility of overlooking some fibers of communication in the operation, and it may be that in some of the disappointing cases, the superior cervical ganglion has not been thoroughly removed. Black has suggested the removal of the middle ganglion with the superior, but I am unable to find any anatomic connection between the eye and the middle ganglion, except through the superior, and when all communication between them has been severed, I believe the middle cervical ganglion can have no influence upon the eye, and its removal with the superior ganglion is an unnecessary amplification.

I believe the operation should always be bilateral, as suggested by Renaud, Suker and others. The disease is essentially a bilateral one, and though but one eye may be affected at the time of the operation, in all probability the other will become involved later. In addition to this, there is reason to believe that when one superior cervical ganglion is removed, in time the influence of the sympathetic system is conveyed by anastomosis from the opposite side.

Tracing the sympathetic cord upward from the superior cervical ganglion, we find it follows the internal carotid artery into the carotid canal of the temporal bone. Here it divides into an outer branch which forms the carotoid plexus, and an inner branch which forms the cavernous plexus. We will disregard the distribution of the numerous filaments which proceed from these plexuses and follow only those which we have some right to believe effect an anastomosis with the sympathetic system of the opposite side. I find three intra-cranial points of anastomosis mentioned: On the anterior communicating artery, in the basilar groove and in the pituitary body. The fibers of the sympathetic proceed from the internal carotid to the anterior cerebral and thence to the anterior communicating artery, where in conjunction with the filaments from the opposite side they form the ganglion of Ribes or the ganglion of Beclard. There is considerable diversity of opinion among anatomists as to the existence of this ganglion. Grav mentions the ganglion of Ribes, but says its presence is questioned by some anatomists. Ludovic Hirschfeldt claims an anastomosis on the anterior communicating artery and says Beclard found there a small ganglion. Sappey claims an anastomosis on the anterior communicating artery, but doubts the presence of Beclard's ganglion. Henle quotes Valentine as his authority for an intra-cranial anastomosis, but does not specify the location. Poirier and Charpy say "The intracranial fibers of the sympathetic, proceeding from each side of the body, anastomose along the anterior communicating (arterv) on a level with the hypophysis and in the dural tissue of

the basilar groove; this last anastomotic way is the most important because the fibers which accompany the basilar trunk come there to meet equally."

Hirschfeldt also dwells upon this anastomosis in the basilar groove and calls attention to the fact that many anatomists consider the pituitary body a ganglion of the sympathetic system which receives fibers from both sides. In van Gehuchten. Deaver and Krause. I find nothing which specifically confirms or denies the existence of this anastomosis. The experiments of Neuscheuler on rabbits and cats also seem to point to an influence dependent upon anastomosis. He found that irritation of the sympathetic not only produced an increase of tension on the side irritated, but also in the opposite eve. The number of cases in which improvement is after months followed by a slow return of the glaucomatous symptoms, point to a re-establishment of an influence which the operation had removed. If this influence is from the sympathetic system. it must come through the unoperated side.

The clinic evidence in favor of the bilateral operation can be drawn from the latest table of statistics which was published by Loring in September, '04. It has been generally accepted that the operation of sympathectomy is more applicable to simple chronic glaucoma than to the inflammatory forms. If this be true, it gives us a surgical remedy for the very cases in which the other forms of operative interference, iridectomy and sclerotomy, are peculiarly unsatisfactory. There seems to be no doubt, from the evidence before us, that Jonnesco's operation has been of service in some cases of the inflammatory type, but owing to the diversity of results, the statistics of these cases furnishes little that is instructive. We will therefore exclude the inflammatory forms and rely upon the evidence furnished by the reports of sympathectomy in simple chronic glaucoma.

Loring has collected 60 cases (i. e. 60 eyes) with simple chronic glaucoma, for which sympathectomy was performed. He finds 41 eyes were observed for three months or more, and excludes all others from consideration. Though partial to the double operation, I was not prepared for the astonishing revelation which he makes, and Loring himself does not seem to have drawn the conclusions which his figures justify. Of the 41 cases observed for three months or more, 22 had the bilateral operation. Of these 22, eighteen improved without reported relapse and four improved but relapsed. Of the four cases which resulted in failure, one hal $^{20}/_{40}$ vision at the time of the operation, two had ability to count fingers at eight and ten feet, and

one had only light perception. It will be seen that of the four cases which failed, three were practically hopeless at the time of the operation. The most interesting fact presented by these statistics is that the eighteen cases which were successful were so far gone at the time of operating, according to Loring, that they did not offer a fair test. He says: "Concerning the early versus the late operation, it appears that seventeen (of the 41) eves came to operation with a fair vision remaining—i. e., ²⁰/₁₀₀ or over; and these may therefore be considered to offer the fairest test for the merits of the operation, on the theory that sympathectomy should be judged by cases that are not too far advanced." He gives the serial number of the 22 (of his 41) cases which had the bilateral operation, and the serial number of the 17 (of his 41) cases which offered a fair test. By comparing the numbers we find but one of the seventeen was operated bilaterally. Of the 22 cases operated bilaterally, but one, or 4.5 per cent, had sufficient vision to offer a fair test of the merits of the operation, and vet 18 of the 22, or 81.8 per cent, were successful. Notwithstanding the large number of cases reported, it would seem that we have not vet sufficient data to determine the value of this procedure, because up to the present time it has been applied without discrimination. The following conclusions seem justified:

- 1. The operation should be performed in cases of simple chronic glaucoma.
- 2. Both superior cervical ganglions should be removed at the same time.
- 3. The operation should be done just as soon as possible after the diagnosis is made.

We believe statistics based upon these conditions will prove that Abadie and Jonnesco have made a contribution of real merit to our science.

A COMMON MISCONCEPTION OF ASTIGMIC REFRACTION.

RY

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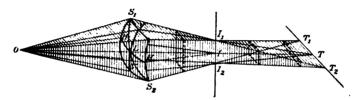
It might seem that an article dealing with so fundamnetal a matter as astigmic refraction is out of place in an ophthalmic journal. I have, however, been so impressed with the widespread misconception prevalent on this subject that I believe a short explanation, with a diagram, will serve a useful purpose in the enlightenment of some students who have been misled by the inaccurate teaching given in many of our best text books.

Fuchs, in his text-book on Ophthalmology,* one of the most widely used and certainly one of the best books on general ophthalmology, describes astigmic refraction incorrectly though a careful study of his diagram, which has been transmitted from older works, shows the matter correctly. Fuchs says: "In this case [regular astigmia] we would have one meridian which refracts rays most strongly, and one perpendicular to it (the vertical meridian) which refracts most feebly; and corresponding to these are the most anterior and posterior foci, f, and f. These two meridians thus distinguished from the others are called principal meridians; those meridians lying between them represent all intermediate stages of curvature and refractive power, and the rays passing through them cut the optical axis in the portion lying between f. and f." There are two misleading statements in this description. The first consists in the insertion of the word "most" before "anterior and posterior foci," thereby leading the student to believe that there are other foci between f, and f. The other and more flagrant error consists in the statement that in the intermediate (i. e. in the oblique) meridians, the rays cut the optical axis between f, and f.

^{*} Page 716, 2d Am. Edition.

Hansell & Sweet, in their Text-Book of Diseases of the Eye (page 85) say: "Parallel rays of light entering an astigmatic cornea are converged to form a line of focal points instead of one focus, the anterior extremity of the line being the focus of that part of the dioptric system that has the shortest radius of curvature, and the posterior extremity of the line, the longest radius of curvature. The intermediate points of the line are the foci of sections of the dioptric system lying successively between the section of greatest and the section of least curvature."

The same error occurs in Duane's article on refractive errors in Posey's Ophthalmology, and in Gibbons's recent work on Refraction and Diseases of the Eye. In the latter book a diagram is given illustrating the focus in an oblique meridian. A number of other books on refraction and ophthalmology.



in "Refraction and Motility of the Eye."—By permission of Lea Bros. & Co.

Refraction at an asymmetrical surface. Modified from diagram which I have consulted dismiss the subject with the assertion that "astigmatic refraction is that condition in which the rays are not refracted equally in the various meridians," no effort being made to show the true significance of the anterior and posterior meridional foci and the course of rays passing through oblique meridians.

The fact that writers of the very highest standing, such as those above mentioned, are seriously at fault in their teaching of this subject to younger students is, I think, sufficient justification for my calling attention in this journal to the error.

In the accompanying diagram HH and VV represent respectively the meridian of greatest and least curvature of a regularly asymmetrical surface. In the meridian HH the focus is represented by I, while T represents the focus in the meridian VV. The former is the anterior, the latter is the posterior meridional focus for rays proceeding from O, and it is apparent that they are the only foci for such rays, that is, they are the only points on the optic axis OT in which rays from O will be united after refraction.

The lines I_1I_2 and T_1T_2 , perpendicular to the optic axis at I and T, and lying respectively in the meridian of least and greatest curvature, are the focal lines, through which (as shown in the diagram) all refracted rays pass.

The rays OS_1 and OS_2 lie in the oblique meridian S_1LS_2 . It is apparent from the diagram that these rays do not, after refraction, cut the optic axis between I and T, as stated by Fuchs and others. The ray OS_1 is so refracted as to cut the anterior focal line at I_1 , and the posterior focal line at T_2 , while OS_1 cuts the anterior focal line at I_2 , and the posterior focal line at I_1 . Neither ray will ever meet the optic axis, nor will the two rays ever meet each other, and consequently there can be no focus for rays lying in this or any other oblique meridian. We thus see the fallacy of the very common belief that for each oblique meridian there is a focus lying somewhere between the foci for the two principal meridians.

RHEUMATIC TENONITIS.*

By F. C. HEATH, M. D.,

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Tenonitis, or inflammation of Tenon's capsule, is of such rare occurrence that many good text-books, like Juler and Swanzy, do not mention it at all, Fox, DeSchweinitz, Hansell and Sweet, Fuchs and Noyes dispose of it in a paragraph or two, while the more extensive works, such as Ball's "Modern Ophthalmology" and Norris and Oliver's "System of Diseases of the Eye," give the subject less than a page.

Having observed a case of this kind a few months since—the only one in nearly fifteen years of eye work—I deem it worth reporting.

On the evening of May 4, 1904, Dr. O. C. Neier, or Irvington, called me up by telephone, stating that he had been trying to get me for several hours, wishing me to see a case, which had some symptoms like purulent ophthalmia and other features sufficiently strange to warrant the calling of a specialist. and, if it were purulent in character or of a nature threatening danger to the eve, we should lose no time and take no chances. Arriving at the patient's residence at 9:30 p. m., we proceeded to inquire into the history and make an examination. Patient had been suffering from rheumatic fever for nearly a week, when swelling began about the right eye (two days before I saw him). This increased rapidly until the lids were swollen almost as much as in moderate cases of gonorrheal ophthalmia. The upper lid was much more swollen than the lower, and the swelling was greatest in the retro-tarsal region. Slight laxity of the skin showed that they had been swollen still more, but had already begun to subside, which accorded with the history given by Dr. Neier. There was chemosis of the ocular conjunctiva extending all around the ball, and some exophthalmos. although less than we have in cellulitis and most of the other orbital affections. Movements of the eve were very limited and efforts in that direction were painful. Tenderness on pres-

^{*}Read before Indianapolis Medical Society, November 15, 1904.

sure was marked, and there was a heavy, tense feeling in the eye, but no pain. Vision was good. There was no discharge. This excluded gonorrheal or purulent ophthalmia, while the slight proptosis, good sight, moderate pain, absence of symptoms pointing to the deeper affections, the fact that swelling had already begun to subside and the recurrence of the trouble during an attack of acute rheumatism, tended to exclude everything else and pointed to the probability of rheumatic tenonitis, the diagnosis being apparently confirmed by the rapid disappearance of the eye symptoms under internal treatment with the salicylates, the only local treatment being boric acid solution and hot applications. The eye was well in a few days, although the articular rheumatism lasted several weeks.

Most cases of idiopathic tenonitis have substantially the signs and symptoms given above, although many show instead of general chemosis of the ocular conjunctiva simply vesicular swelling over one of the recti muscles, the serum coming forward along the sheath of the muscle.

The meager literature on the subject brings out the fact that idiopathic tenonitis may arise from rheumatism, gout. diphtheria, typhoid fever or influenza, and the effusion is serous in character, while the traumatic cases are most frequently due to infection in tenotomy of an eye muscle, are purulent usually and-threaten danger to the eye from possible panophthalmitis.

In our case it was sufficient to continue the efficient treatment of Dr. Neier, whose caution and devotion to his patient's welfare are most commendable and more than justified the consultation in view of the peculiarity of the symptoms and the extreme rarity of such cases.

ABSTRACTS FROM ANGLO-AMERICAN OPHTHAL-MIC LITERATURE.

RV

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A Case of Anophthalmos.

GRAEF, CHARLES, New York. (New York Med. Jour. and Philadelphia Med. Jour., September 3, 1904).

Soon after the birth of the child it was noticed that the upper lid curled deep into the orbit with the thickened lower lid overlapping it. The orbital cavity was small and lined with conjunctiva. No trace of an eyeball was detected. The lower lid was swollen and bluish, probably from the formation of a cyst filled with serous fluid and containing retinal elements in its walls, which are usually connected in these cases with the rudimentary eyeball undiscoverable during life. There were no traces in the family history of imperfect development, poor nutrition, or defective vital stamina. There was nothing abnormal about the eyes of the parents. The pregnancy of the

mother had been uneventful, except for a fall about the end of the sixth month. Labor had been easy and unassisted. In every other way the child was perfectly formed. M. L. F.

Concerning Certain Cases of Asthenopia and Eye-Strain Which are Independent of Refraction Error and Muscular Imbalance.

DE SCHWEINITZ, G. E., Philadelphia. (Pennsylvania Med. Jour., June, 1904).

While the author believes that at least 75 per cent. of ocuiar disorders depend on anomalies of the refraction, accommodation and motility of the eyes, he recognizes that a minority depends on other causes. In this article he deals with three of these

- 1. The lithemic state he holds responsible for certain cases with an itching, burning, or formication of the lid margins when examination reveals no trace of blepharitis, or parasites and the cilia are normally placed. The symptom is most noticeable in the early evening soon after the beginning of artificial light, and is aggravated by attempts to read or do near work.
 - 2. Edema of one or both eyelids.
- 3. Tender spots in the ciliary body with occasional ocular pains as if a needle were thrust through the eye for a second.

In all of these the simulation of eye-strain is perfect, but attempts to relieve with glasses or attention to the muscles are unavailing. Treatment must be directed to the relief of the disordered nutrition. In another class of cases there is a sensation as if there were a foreign body in the eye. This symptom is most frequently met with in neurasthenics and disappears with the restoration of nervous control. Without reference to the presence of subnormal accommodative power as a sequel of acute illness or a symptom of neurasthenia and hysteria, the author believes it is often the first sign of diabetes mellitus, and that it is caused by ptomain poisoning in the widest sense of the word.

M. L. F.

Trachoma and Some Diseases Resembling 15.

NYDEGGER, JAMES A., U. S. PUBLIC HEALTH AND MARINE HOSPITAL SERVICE. (N. Y. Med. Jour. and Phila. Med. Jour., September 17, 1904).

According to the observations of the writer there appears to be no relation between the two diseases, trachoma and follicular conjunctivitis, and the latter does not seem to be the forerunner of trachoma. The author thus lines himself up on one side of this mooted question, but presents no evidence in support of his position.

M. L. F.

Eye-Strain and the Psychoses.

Dana, Charles L., New York. (Medical News, July 30, 1904).

The author defines eve-strain as consisting of two kinds of straining. In one case it is the automatic effort of the midbrain and oculomotor nerves to adjust the eye in such a way as to overcome abnormalities in refraction, accommodation and imperfect muscular balance. The other occurs when the eve is more seriously defective or the receiving apparatus of the brain is fatigued. Regarding its connection with the psychoses he says that after sixteen years of watching he has hardly found any cases in which eye-strain was an important and direct factor in establishing even a minor psychosis, though it modifies its symptoms and secondarily adds to the disturbance. The visual function is largely automatic and spinal, and when the mind is a good mind the visual machinery does not overthrow or directly or seriously affect it. When the mind is unstable, or the body weakened, cerebral eve-strain may do some harm, but eve-strain does not form the background of most pathological conditions. M. L. F.

The Eye Symptoms of Hysteria, Neurasthenia and the Traumatic Neuroses.

HOLDEN, WARD A., New York. (Medical News, July 30, 1904).

The states which give rise to these symptoms are first, the cornea and conjunctiva may be anesthetic or hyperesthetic; second, the eye muscles may be relaxed from fatigue, or be in a state of spasmodic contracture; third, the visual perceptive apparatus may show signs of fatigue while there may be also psychical perversions of visual perceptions. The patients complain of pain, paresthesia, clouds or bright spots, and change of size of objects seen. There may be a tremor of the lids when the eyes are closed, lacrimation and photophobia. There is often a lack of balance of the extrinsic muscles, or there may be a spasm which causes diplopia. diplopia is sometimes present and is a valuable diagnostic sign. Anomalies of the visual fields are the most frequent and most characteristic eye disturbances in hysteria and neurasthenia. The color fields are sometimes very bizarre and then the diagnosis is easy. M. L. F.

Operation Upon the Eyebali in the Presence of an Infected Coniunctival Sac.

BULL, CHARLES STEDMAN, New York. (Medical Record, September 24, 1904). The author thus summarises his conclusions:

- 1. A careful microscopical and bacteriological examination should be made of the contents of the conjunctival sac in every suspected case, carrying the examination so far as the cultivation of the bacteria in a proper medium, and the subsequent inoculation of the germs.
- II. If toxic germs are found in great numbers, no matter what their varieties, no operation on the eyeball should be undertaken until the germs have disappeared, and the conjunctival sac has been rendered as sterile as we can hope to make it.
- III. If there is suppurative disease of the lacrimal passages, whether of the canaliculi, sac or nasal duct, all operations upon the eyeball are positively contraindicated. The lacrimal sac must be excised and the lacrimal puncta must be obliterated by the galvano-cautery, before operation on the eyeball is undertaken. In the case of a catarrhal dacryocystitis, or of mucocele of the sac, both canaliculi should be incised and the sac injected daily with an antiseptic astringent solution, and free irrigation through the nasal duct carried out until all secretion has ceased. Even in cases of great urgency, as for example, acute inflammatory glaucoma, the writer would not feel himself justified in modifying the above statement.
- IV. If the secretion of the conjunctival sac on examination is found to be infected, but the bacteria are few in number and of slight toxic variety, operations may be done on the eyeball when necessary, but these eyes should be opened and examined twice in the twenty-four hours and the conjunctival sac gently irrigated with warm normal salt solution, or warm sterilized boracic acid solution, and then the eye should be immediately rebandaged.
- V. In operating upon the normal eyeball in the presence of an apparently normal, sterile conjunctival sac, the following steps should be taken.
- 1. The forehead, eyebrows, temple, cheeks, bridge of nose, and external surface of the lid should be carefully cleansed with hot water and soap and dried with aseptic cotton pads.
- 2. The margins of the lids should be carefully, but gently rubbed with sterilized moist cotton pads and simultaneously irrigated with a warm, sterilized, physiological salt solution.
- 3. Careful irrigation of the conjunctival sac with the same sterilized normal salt solution and then closing the lids with a

moist, sterilized cotton pad. The lids should remain closed in this way until the speculum is introduced.

VI. In all cases the bandage should be removed and the eye examined under the strictest aseptic precautions, as strict as those employed at the time of operation.

VII. On the first sign of infection of the wound the edges of the lids are to be thoroughly cleansed in the same manner as at the time of operation; the conjunctival sac is to be thoroughly irrigated with the sterilized normal salt solution; the wound is to be reopened and cauterized through its entire length with the galvano-cautery; and the anterior chamber is to be gently but carefully irrigated with a sublimate solution (1-5000); and then the conjunctival sac must be again irrigated and the lids must be closed simply under a moist, sterilized pad."

The Present Status of Cervical Sympathectomy for Glaucoma Simplex.

LORING, ROBERT G., Boston. (Archives of Ophthalmology, September, 1904).

In 1897, Jonnesco first removed the superior cervical sympathetic ganglion for relief of glaucoma. Since then the operation has been many times performed in Germany, France and America, on glaucomatous eyes in all varieties and in all stages. In 1900, Axenfeld collected all the cases in the literature at that time and summarized the results. Wilder has recently collected the American cases (Annals of Obhthalmology. January, 1904), and it may be estimated that probably over one hundred and fifty cases may be found in the literature up to the present time. Yet with this large number of cases still nothing particularly decisive has been proved. generally admitted that almost all cases show a temporary improvement, especially the chronic inflammatory cases and the cases of glaucoma simplex. Generally in chronic inflammatory glaucoma a decided improvement has been noted in all symptoms, especially as regards vision, but in nearly all these cases the time of observation has been too short to warrant definite conclusions. Altogether, however, it is in glaucoma simplex that the best results have been obtained, a fact of special importance, as here iridectomy is universally admitted to be of least value. Summing up the results of the published cases in 1900, Axenfeld concluded that the operation was not a dangerous one; but there was no certainty that every case would be improved, or, if improved, that it would remain permanently so. He concluded that in acute glaucoma sympathectomy was

to be rejected unless iridectomy was refused, or had been harmful on the other eye, or had failed to arrest the disease. In hemorrhagic glaucoma, it was a justifiable expedient, though of doubtful value. In chronic inflammatory glaucoma and in glaucoma simplex, he believed that a series of successful published cases showed that the operation was to be recommended as a sequence to iridectomy. In glaucoma simplex. however, it might be given the first place over iridectomy in those cases when there is a great loss of vision, and where iridectomy generally proves useless or is followed by a still more rapid failure. These observations are practically agreed upon by Hoor and Abadie. Loring further states that in acute and chronic inflammatory glaucoma the removal of the superior cervical ganglion has failed to establish its claim as a rival to iridectomy, and that little of a more favorable nature is to be expected from it in the future. glaucoma simplex, on the other hand, the matter is far different. Here iridectomy is admitted to be of much less value. in some cases seeming even to diminish rapidly what vision remains: so that it becomes of the utmost importance to decide definitely what sympathectomy can do. Six years have elapsed since the introduction of this operation and a considerable number of cases of glaucoma simplex have been operated on, but still the final word has not been spoken. As a contribution to the settlement of this question, the writer has collected from the literature all the cases reported up to the present time that were accessible to him, and presents a detailed summary. The literature shows sixty cases of glaucoma simplex treated by sympathectomy, counting each eye as one case. A general table of these has been arranged, giving the operator, and showing, first, the cases that improved without relapse so far as observed, and the duration of this period of observation; secondly, the cases that improved, but later relapsed; and thirdly, the cases that were not improved at all. Summarizing the cases, it appears that in a great majority of all of them there is a more or less striking improvement following sympathectomy, and, so far as immediate results are concerned, altogether good grounds for the enthusiasm of the advocates of the operation. Total number of cases of glaucoma simplex treated by smpathectomy, with results and length of observation (counting each eye as one case): Improved, 41 cases. Improved, but later relapsed, 12 cases. Not improved at all, 7 cases. But when one rules out those cases that were reported without subsequent observation of some weeks or months at least, the verdict is not so favorable. Many cases soon suffer a relapse, and the vision becomes as before the

operation or even worse; or a glaucoma simplex may rapidly develop into acute glaucoma. This, for instance, happened in four of the sixty cases. Selecting from those cases that have been observed for at least three months and omitting as unconclusive the temporary cases, one gets a more instructive, but less favorable view. Of the sixty cases, the number that was observed for three months or more is 41, and these have resulted as follows: 29 or 70 per cent. were improved for three months or more with no record of any relapse. Few of the cases were observed longer than one year.

In the series, those that showed the greatest improvement the latest are two reported by Abadie (one year), four by Axenfeld (ten and twelve months), one by Rohmer (one year), one by Altland (seven months), one by Angelucci (six months), and one by Starr (six months). Another case reported by Rohmer showed an improvement in vision from perception of light to one-half of normal and held this for several months. The remaining 12 cases are reported as relapsing within various periods from nine weeks to one year, 4 of these becoming acute glaucoma. Serious after results from sympathectomy are not reported either from the single or double operation. The serious results noticed in some animal experiments are at any rate not apparent in the clinical reports. The ptosis is not marked and tends to disappear. Cases in which a variable amount of congestion remaining after 3 years in bulbar and palpebral conjunctiva: suppression of the sweat function, trouble in mastication and swallowing, and hyperesthesia, have been reported, but all tend to disappear after a variable length of time. Summarizing, the theoretical basis for sympathectomy in glaucoma, one finds oneself in the realm of hypothesis with various conflicting theories. From a therapeutic point of view, however, the large number of reported positive results presents something fairly tangible. It is true a study of the clinical results fails to show any factor, so far as the writer has been able to discover, that determines how far the operation will be successful in any given case, or what determines the duration of a favorable result. Clinical reports fail to show any marked gain in the early versus the late operations. Possibly it may be shown that the bilateral operation gives the most favorable results. Still it may be said that in glaucoma simplex the tension is reduced in almost all cases generally to normal, and that it may remain so for many months. The vision shows at least a temporary improvement in a majority of cases, often an improvement of considerable duration, unless an advanced atrophy makes vision out of the

question. Serious after-results that may be said to contraindicate the operation, have so far not been demonstrated. The writer believes that sympathectomy is a distinctly justifiable operation that ought to be more often tried as a final resort in glaucoma simplex when, notwithstanding miotics, iridectomy and sclerotomy, the disease progresses steadily towards eventual blindness.

Report of Two Cases of Family Macular Degeneration of the Cornea.

VEASEY, CLARENCE A., Philadelphia. (Archives of Ophthalmology, September, 1904).

In January, 1904. Fehr reported from the eye clinic of Hirschberg, three cases of corneal affection which he has termed family macular degeneration. The disease is characterized by a progressive opacity of the cornea of both eyes, beginning about the tenth or twelfth year of age, and finally leading to disability for work after about 30 years. The opacity is diffuse and intermingled with numerous whitish dots and maculae: but upon close examination with a strong loupe, the opacity is found to consist of numerous fine chagrin dots. The opacity is densest in the center, and the superficial layers are those principally involved in the periphery; however, the deeper layers are most affected. There is no vascularization, and no tendency to involve the deeper structures of the eve. and indeed beyond the progressive failure of vision and any slight irritability and photophobia, there are no subjective symptoms. There seems to be a tendency to affect several members of the same family, but the etiology is undetermined, and treatment has proved ineffective. Fehr regards it as an intermediate form of corneal disease between the maculae and lattice-like opacities, described by Haab, Dimmer, Freund, Groenouw and Fuchs. He has reported three cases (two sisters and a brother), and in reviewing the literature found only one case (Koeber's) probably identical with his. To these four cases, the writer adds the two following, a brother and a sister. Case 1: W. R., a married male, 41 years old. The patient recalls no ocular conditions of his grandparents, his father's eyes were good, and personal examination of the eyes of his mother, aged 71 years, shows them to be normal. The patient's general health is excellent. During childhood he had measles and scarlet fever. but no abnormal conditions followed the attacks. About the fifteenth year of life he began to have trouble in seeing the blackboard in school, and thought he was nearsighted. The condition grew worse, until an oculist was finally consulted, but no glass was found that would materially improve the vision.

The same result was obtained by several other oculists, and at the time of the first examination by the writer he could read nothing but very large print (I. 12), and vision equaled in each eve 15/cc. Examination of each cornea showed it to be diffusily hazy, with numerous gravish-white spots and maculae here and there, the opacity being more marked near the center. This haze with a loupe can be resolved into hundreds of minute dots in the midst of which were found maculae of various shapes and sizes, and most marked near the center. In the periphery of the cornea the opacity was not only less dense but occupied the deeper layers. The surface of the cornea was perfectly smooth, and sensation was normal. The pupil reaction and the lens were also normal, vision had progressively failed, and at the time of the examination the patient could do no fine work. Excepting the progressive failure of vision, slight irritability, producing more or less lacrimation, and some photophobia in very bright light, there were no subjective symptoms. The last time the patient was examined the condition was becoming more marked, and vision at the present time equals 3½-100 in the right eve and 3-100 in the left eve. No treatment has checked the process, and no lens has improved the vision, over a period of more than five years. The patient is the father of two healthy children, aged eleven and nine years, both of whom have normal eyes at the present time.

Case 2: B. R., an unmarried female, aged 43 years, is a sister of the patient first described. She has always been healthy, excepting an attack of erysipelas in early childhood and some catarrhal deafness. About the twelfth year of age she just observed that she could not see so well, and also thought she was myopic. At the first examination in February, 1899. the vision of each eve equalled 1-40; at the present time it is 1-50 of normal. She can only see very large type (J. 14), No glass improves vision and she is incapacitated for all but the coarsest kind of work. The corneal symptoms are exactly similar to the brother's, except that they are somewhat more advanced. There are also four other brothers and sisters, the eves of whom are perfectly normal. In a thorough investigation of the cases no cause could be found to which to attribute the condition, and all treatment has been powerless to check its progress.

A Case of Pseudoleucemic Lymphomata of the Eyelids, Followed by a Generalized Formation of Lymphomata.

DUTOIT, ALFRED ALBERT, Berne. (Archives of Ophthalmol-

ogy, September, 1904. Translated from Arch. f. Augenheilk., XLVIII., 2, Aug., 1903, by Dr. Matthias Lanckton Foster).

The following is the record of an incompletely observed case, with symmetrical lymphomata of all four lids, reported from the clinic in Leipsic.

H.G., eighteen years old. Chronic dacryocystitis for six years not improved by slitting the canaliculi and probing. The inner third of each lower lid was bluish-gray, smooth, shining, and slightly prominent. Palpation revealed firm, deeply placed tumors, about as large as peas, which could be seen on eversion of the lids, more plainly on the left side. The tumors were excised from both lower and the left upper lids. Each was abut the size of a pea, and was found under the microscope to be composed of lymphatic tissue, sharply distinguished from its surroundings. A more important contribution to the study of these tumors is made by a case under observation until the autopsy, a part of the history of which has already been published by Boerma. I will recapitulate, briefly, the principal points in his paper. The patient stated that the disease had begun two years before with swellings in both upper lids. Six months later the glands in the neck and groin became swollen. The tumors were firm, elastic and wholly occupied both lids of the right eve and the lower lid of the left, while in the left upper lid two nodules as large as beans could be felt. The tarsal conjunctiva of each upper lid was smooth, not movable, over the tumor. In the four retrotarsal folds the conjunctiva was peculiarly gelatinous, grayish-yellow and slightly lumpy. The appearance of the right lower retrotarsal fold particularly reminded Boerma of myloid degeneration. No exophthalmos. The skin was normal and was not adherent to the tumors. The anterior and posterior cervical and the epitrochlear glands were enlarged. In each groin were about six tumors as large as small apples. The tumors were shelled out of all the lid; through the conjunctiva by blunt dissection. Three and a half months later there was a firm, elastic tumor as large as an almond in the right upper lid, and three nodules, scarcely as large as peas, in the outer part of the left upper lid. No tumors in the lower lids. No exophthalmos. Blood normal. Glandular swellings as before, no new ones. General health good. The tumor of the right upper lid alone was shelled out through the skin, leaving the conjunctiva uninjured, except for a slight incision. Boerma's next and last notes were made about six weeks later, in October, 1893. No tumors in the lids of the right eye. Lids of left as before. No change in the general condition. This patient reappeared March 5, 1895.

She had suffered the whole time from lacrimation. There had been a true loss of vision for some weeks, and the tumor in the left upper lid had grown larger.

A retinoscopic examination could not be made.

R. $V = \frac{6}{160} + \frac{6}{36} + \text{ with } -2.50.$

L. V.—6/36; not improved by glasses.

Right eye: Good closure of lids. Slight ectropion of lower lid. Greatest width of palpebral fissure 6 mm. Swollen plica semilunaris covered the cornea to the margin of the pupil. On eversion of the lid, a yellowish tumor, nearly as large as a pea, and two smaller ones, like millet seeds, could be seen beneath the tarsal conjunctiva. On the plica where it passed beneath the upper lid, were two nodules, nearly as large as hemp seed. Somewhat above the outer canthus was another tumor, as large as a cherry.

Left eye: Lids closed well, but could be opened only for the space of 1 mm. A growth, the form and size of half a plum, occupied the upper lid from a point 6 mm, from its free margin to the orbital margin. A nodular tumor as large as a small cherry, could be felt at the outer canthus, where it was covered partly by the upper, partly by the lower lid. upper retrotarsal fold was replaced by a sausage-shaped mass. In the plica there was a nodule as large as a millet seed, and in the upper fornix were two as large as peas between the two large tumors. The tumors of the left upper lid were removed without injury to the conjunctiva. On the right side the tumor of the plica alone was removed. A gland removed from beneath the chin was found to be adherent to the skin, but elsewhere easily separable. Seventeen days later there was a tumor, almost as large as a cherry, in the left upper lid, which on removal was found to be so adherent to the skin and subjacent tissues that it could not be completely shelled out. There was no reaction, and the patient could open her eyes much better. At this time there was a growth, as large as a cherry, in the right upper lid, in the outer third, and another as large as a cherry-pit in the inner third. There was an indefinite hardness in the left upper lid. In the middle of the right cheek were two glandular swellings as large as plums; toward the right ear another of the same size; at each angle of the jaw and under the chin were others as large as cherries. There was enlargement of the glands, in front of the sterno-cleido-mastoid, behind the ear, in the supraclavicular fossa, and in the axillae. In each groin was a nodular lump and in each popliteal space. Blood normal. Prescribed arsenic, and discharged from hospital.

Re-entrance November 28th, 1895. Examination by Prof. Small, weak, emaciated women, Skin vellow. pale, and dry Slight edema at the ankles. At each external canthus there were tumors as large as half beans, and scattered over the body were many infiltrated lymphatic glands. A chain of glands ran from the left mastoid process to the chin. There was a row of three along the margin of the left trapezius, two at the edge of the right trapezius, one on the left side of the vertebra prominens, one beneath the right mastoid process, two beneath the right ramus of the lower jaw, four in the left and one in the right supraclavicular fossa and one just below the left clavicle, all of about the size of peas or beans. They were also found in the right and left axilla, median sulcus of right arm, left epitrochlear region, and above the right internal condule. Below Poupart's ligament, on each side was a mass of glands, and in the right and left poplitral In the pelvis large masses seemed to lie on the ileoproas muscles. The hard palate was swollen, and the tonsils were hypertrophic and red. The patient's appetite was fair: her urine and bowels normal. Examination of the blood. November 30, 1895. From the color of blood corpusclus normal. Number of the red 3.936,000; of the white 12,000. Hemaglobin, 84 per cent. Three days later, number of the red corpuscles 4.088.000, of white 10,000. Hemaglobin 89 per cent. At the right inner canthus a tumor as large as a pea could be felt in the lower lid, and one nearly as large as a cherry in the upper lid. In the middle of the right upper lid, and in the outer third, were tumors, and also in the tarsal conjunction of the left upper lid. Discharged from hospital and directed to take arsenic.

Re-entered March 8th, 1897. The right upper lid was rigid from the presence of three tumors. The entire left upper lid was occupied by an oval tumor. In the left lower lid were two smaller tumors. Twelve days later the tumors were removed from the right upper lid. Pleurisy and broncho-pneumonia supervened, and caused death on the ninth day.

Autopsy.—In addition to the glandular tumors beneath the skin, numerous nodules were found in the soft palate, base of the tongue, the esophagus and the trachea. The tonsils were transformed into large tumors. The lymphatic glands about the bronchi were swollen, while nodules were scattered over the cut surface of the lungs and on the diaphragm. The kidneys contained nodules. The gastric follicles were changed into little grayish-yellow nodules, and the intestinal follicles and Pever's patches, were involved. The mesenteric and re-

troperitoneal glands were coalesced into tumors of the size of a child's head. Diagnosis: pseudoleucemia.

Remarks.—The observation of this patient extended over five years. The duration of the disease was approximately seven years, which is remarkable, the average being from one to two years in cases in which arsenic is not used or does not work well. The initial symptoms in this case were symmetrical growths in the four evelids, while the autopsy showed that the disease had invaded almost every organ. To briefly recapitulate, we had to deal with a general disease the long duration of which was in accordance with the universal distribution of Infiltration of one lymphatic gland after the metastases another was added to the rare initial symptom. The progressive stage was marked by anemia and cachexia, enlargement of the liver, and coalescence of separate glandular tumors, while the spleen remained remarkably in the background. Then the autopsy revealed infiltration of the follicles of the mucous membrane of the throat, esophagus and gastro-intestinal canal, together with an unusual form of tumor of the spleen. A diagnosis to which no exception might be taken could not be made in this case because the number of the lymphoctes was not increased. This case should be classed as one of pseudoleucemia because of its long and uniform clinical course and its comparative benignity. After reviewing the cases reported by other authors, the writer groups cases after this type, in the following manner:

- 1. Cases in which only the upper lids were involved.
- 2. Cases in which tumors were found in all four lids.
- 3. In all the other cases the lymphatic glands were involved to some extent. This varies from a case in which a single gland of the chin and infiltration of the palate were reported to that of one in which there was almost universal glandular hyperplasia.
- 4. The cases with swelling of the salivary glands are of special interest. Different views are held regarding the diagnostic importance of swelling of these glands. A tumor of the spleen coincident with lymphomata of the lids and orbits is mentioned by Guaita, Reymond and Fleischer. In Guaita's case the glandular swelling and the tumor of the spleen preceded the ocular symptoms.

It has now been shown that pseudoleucemia may appear first on the lids or conjunctiva, and that the conjunctiva is apt to be extensively involved when primary lymphomata appear in the lids or orbits.

H. G. G.

Method for the Rapid Removal of Fine Ingrowing Eyelashes.

JOHNSON, LINDSAY, London, (Ophthalmoscope, Nov. 1904) suggests that if a minute particle (say 0.2 to 0.5 milligrammes) of cobblers' wax or resin be placed between the opposed blades of the epilation forceps and the latter gently heated for a second, the wax will spread over the blades, and allow of a firm grip being obtained, in consequence of the adhesion of the hairs to the wax. This wax can always be melted and then wiped off and a fresh layer put on in a moment. S. H. B.

Stovain: The New Local Anesthetic.

STEPHENSON, SYDNEY, London, (Ophthalmoscope, Nov. 1904) in describing stovain, states that it is non-irritating. non-toxic, antiseptic and efficient anesthetic. This product is the hydrochlorid of emylein B. It occurs in small white flakes, is extremely soluble in water, and its chemical reactions are almost identical with those of cocain. Its solution is not altered by boiling, since decomposition does not commence until a temperature of 120° C. is reached. His experiments with a four per cent. solution of stovain led him to conclude that the substance is a trustworthy and relatively non-toxic anesthetic.

S. H. B.

Expedients in Cataract Extraction.—Fixation of the Conjunctival Flap.—Persistent Antisepsis.

Maddox, E. E., Bournemouth, (Ophthalmoscope, Nov. 1904) states that the two principal causes of failures after cataract extraction (granted skillful performance of the operation) are (1) deficient vitality or "resisting power" of the tissues; (2) the impossibility of effecting absolute disinfection of the conjunctival sac, particularly in the presence of any affection of the tear passages. The two procedures which Maddox describes are: (1) conjunctival suture, and (2) the application of a persistent antiseptic dressing over the tear passages.

- 1. As advantages for conjunctival suture he claims more speedy union, protection from infection, greater security from accident, smaller prolapses if any, greater freedom for the patient, fewer cases rejected as inoperable, and the greater facility with which the open dressing can be employed. As possible disadvantages he mentions the small amount of aid they afford, the danger of sepsis, prolongation of the operation, and increased astigmatism.
- 2. As regards persistent antisepsis after operation, he refers to one case in which after closing the lids at the conclusion of

the operation, the hollow between the eye and the root of the nose was filled up by a small teaspoonful of finely powdered boric acid. The usual dressings were then laid over this. By the following morning, the tears had melted a greater part of it away, showing that the lacrimal sac must have been perpetually bathed in the solution. In other cases, he has used the common surgical combination of iodoform and boric acid with good results. As indications for the use of heat and cold after discission for congenital cataracts, he gives the following: "A small pupil shortly after operating cries for ice. A dilated pupil with swelling lens, and especially if with rising tension, cries for heat." He also states that the penetration of anesthetic eyedrops may be greatly assisted by massage through the eyelids.

S. H. B.

Modification of Bowman's Suction Curette.

GRIFFIN, W. WATSON, (Ophthalmoscope, October, 1904), has modified the original suction curette devised by Bowman, so that suction takes place automatically. This is effected by means of a wire wound spirally around the piston rod and fixed at one end to the body of the instrument and at the other to the top of the piston rod. In using the instrument, the piston is pressed down with the thumb, then, on relaxing the pressure the wire spring comes into action and gently and gradually withdraws the piston and thereby sucks up the lens material.

SHB

A Case of Congenital Word-Blindness.

HINSHELWOOD, JAMES, Glasgow, (Ophthalmoscope, October 1904), gives the history of an additional case of the congenital cerebral defect which he describes by the term "word-blindness." The patient was a boy, 12 years of age, who had been seven years at school and had been unable to learn to read. He complained of no difficulty in seeing and examination showed the visual acuity, refraction and fundus to be normal. He was said to be quick and intelligent in everything except reading and was especially good in arithmetic. He concealed his defect in reading for a time by learning his lessons by heart, so that when it came to his turn and he got a few words at the beginning, he could repeat the lesson by heart. His auditory memory, therefore, was evidently very good. Examination showed that he could rarely read by sight more than two or three consecutive words, but came to a standstill every second or third word, and was unable to proceed unless he were allowed to spell out the word aloud, thus appealing to his auditory memory, or to spell it silently with his lips, thus appealing to his memory of speech movements, glosso-kinesthetic memory of Bastian. The words he stuck at were chiefly polysyllables, but this was not always the case, as he often failed to recognize by sight even simple monosyllabic words. He spelt very well, and when asked to spell the words which he had failed to recognize by sight, he nearly always did so without any difficulty. He wrote a long passage to this observer's dictation with only two mistakes in spelling. His parents and schoolmaster were advised to make no further attempts to make the patient read before the class, but that he should have frequent short lessons, both at home and at school. After two years of training under this plan the lad made marked progress in his studies. Hinshelwood infers that in the case of these defective children, their difficulty in learning to read can most readily be explained on the ground of some defect in the special area of the brain, where are stored the visual memories of words and letters. The treatment is educational. Short, frequent lessons addressed to the patient alone are necessary. He has found block letters to be of great assistance. S. H. B.

Bacteriology of Conjunctivitis.

Pollock, W. B. Inglis, Glasgow, (Lancet, October 29, 1904), before the Ophthalmological Society (England) gave a review and analysis of 204 cases of conjunctivitis in which microscopic examination had been made. There were 145 cases of acute muco-purulent conjunctivitis (including the acute contagious conjunctivitis of Weeks). Of these, 108 were due to the bacillus of Weeks, seven to the diplobacillus of Morax, one to the pneumococcus, two to the gonococcus, and six to the staphylococcus pyogenes aureus. There were three cases of mixed or superimposed conjunctivitis and eighteen indefinite or negative results. In nine cases of purulent conjunctivitis, four were due to the gonococcus, three to the bacillus of Weeks, one to the pneumococcus, and one to mixed infection with bacillus subtilis. In twenty cases of subacute conjunctivitis (Morax) the diplobacilli were found 14 times. the bacillus of Weeks once, and there were five indefinite or negative results. In ten cases of ophthalmia neonatorum, gonococci were found eight times (once mingled with streptococcus pyogenes) and the pneumococcus once and one case was negative. One case of membranous conjunctivitis due to the staphylococcus pyogenes aureus and several other cases completed the series. The absence of a capsule round the diplobacillus as

shown by ordinary staining methods, was noted. The bacteriologic examination of the conjunctiva in cases of phlyctenular ophthalmia only showed staphylococcus pyogenes aureus, albus, or the so-called xerosis bacillus.

S. H. B.

Blood-Vessels of the Optic Disk in Certain Mammals.

NETTLESHIP, E., London, (Lancet, October 29, 1904), before a recent meeting of the Ophthalmological Society (England) read notes on the blood-vessels of the optic disk in certain mammals (18 species), including a few marsupials (three species) but no monkeys. The eveballs were obtained from the post-mortem room of the London zoological gardens. The observations were based on the microscopic examination of both transverse and longitudinal sections of the optic disk and contiguous part of the optic nerve. It was found that in many mammals, the retina was almost entirely supplied by arteries derived from the chorioidal system—cilio-retinal vessels—that reached the retina by passing round the sclerochorioidal border of the disk. Ophthalmoscopically this arrangement often caused an appearance somewhat like that of deep-seated glaucomatous cupping. No cupping was found in any of these sections. Another interesting observation was that even when the cilo-retinal vessels carried virtually the whole retinal supply, the central artery was seldom, if ever, quite absent, though often reduced to a minute vessel entering the optic nerve close to the eve. In some species such a minute central artery became much enlarged at the lamina cribosa by tributaries from the chorioid or sclerotic, the short trunk thus formed breaking up almost immediately in the disk for distribution to the retina; and ophthalmoscopic examination of such an eve would naturally lead to the erroneous conclusion that the supply was from a large artery in man.

In the discussion of this paper, Lindsay Johnson referred to 500 sketches which he had obtained from various animals, in delineating which he had examined as many eyes of the same species as were available and alluded to the apparent dissimilarity between the appearance of the disk during life and microscopic sections made after death.

S. H. B.

Glioma of the Pons.

SUTHERLAND, G. A., and HOLLAND, EARDLEY, (Abstract in Ophthalmoscope, October, 1904), record a case of this condition occurring in a child aged $6\frac{1}{2}$ years, who suffered from persistent headache which had supervened three days after a blow from a brick upon the back of the head. Three weeks

later, other symptoms, as squint, unsteadiness in walking, alterations in speech, dribbling of saliva, immobility of the right side of the face, and occasional difficulty in swallowing, made their appearance. Upon examination, there was found bilateral paralysis of the sixth and seventh nerves. The evelids could not be tightly closed, the face was mask-like and saliva was constantly dribbling from the mouth. The soft palate was paretic and anesthetic, the voice was of nasal character, speech was slow and deliberate. Gait was ataxic, knee-jerks were exaggerated, plantar reflexes were of the extensor type. ankle-clonus could not be elicited. There was no defect of intelligence and the fundus showed no objective signs of disease. Death occurred seventy-nine days after beginning of the illness. At the necropsy, the ventral aspect of the pons presented the aspect of a lobulated mass which was subsequently shown to be glioma. SHR

A Bacteriological Study of Trachoma, with Remarks on the Occurrence of the Influenza Group of Bacteria in Conjunctivitis.

KNAPP, ARNOLD, New York, (Archives of Ophthalmology, September, 1904). In 1902-4 the author examined bacteriologically 120 cases of trachoma, being led to do this by the greater advantages offered at the present date than previously. The cases which applied for treatment, under the systematic school inspection being unusually early ones, and with the method of forceps-expression a larger quantity of material could be obtained for examination than had been possible for previous investigators. Müller, in an examination of trachoma in Egypt and Graz, found an influenza-like bacillus in 59 out of 155 cases—more frequently in recent cases. He has never found this bacillus in non-trachomatous cases, and is inclined to regard it as the inciting factor in trachoma. Culturally and morphologically this bacillus cannot be distinguished from the influenza bacillus. Müller, however, does not regard it as identical with the influenza bacillus. Müller's bacillus has the following characteristics:

Morphology.—Very small, short bacilli, generally twice as long as they are broad; outline not sharp; rounded ends; stain best with carbol-fuchsin; Gram negative.

Culture.—Exclusive growth on hemoglobin media on which after 24 to 48 hours, small, clear, dew-drop colonies appear, seen only with a magnifying glass. In proximity of contaminating colonies, Müller's colonies are much larger. This trait is also common to the influenza bacillus. In subsequent cultures threads are present. Animal experimentations are neg-

ative. In the cases of trachoma which the author examined the symptoms had generally not been sufficient to draw attention to the lids. The cases were not typical and, he adds, were likely to be considered by many ophthalmologists relatively benign and the measures used for treatment unnecessarily severe. He states that it is his belief that we must recognize a variation in the intensity of the trachomatous process, possibly due to a variable toxicity and to other especially hygienic factors. During the first winter the follicle contents obtained by expression from 80 cases were examined. Though this had been done before with negative results, the writer claims it seemed to him of more promise from the above mentioned reasons, and from the fact that the method of expression was used, and as the conjunctiva was not cleansed in any way, the injecting agent might be detected, even if only present in the conjunctival discharge or in the epithelium.

BACTERIOLOGICAL EXAMINATION OF THE FOLLICLE CONTENTS.

Follicle contents were spread on cover glass and stained in many ways for bacteria. Clear pictures were difficult to obtain on account of the great quantity of cellular elements present. Best results were given by (1) overstaining with Loeffler's methylin blue and decolorizing with dilute acetic acid and (2) by the Weigert-Gram method. In general this examination was negative.

In the first series of investigations the follicle contents were directly streaked with roller forceps agar, glucose agar, ascitic agar, (ascitic fluid $\frac{1}{3}$ agar $\frac{2}{3}$), and hemoglobin agar. Colonies of the s. p. a. and xerosis bacillus developed, (excluding manifest contaminations).

In the second series, follicle contents were first transferred to broth tubes and placed in an incubator; after 3-24 hours they had become clouded. Streaks and pour plates were made, but all were quickly overgrown by s. p. a.

In the next series the follicle contents were carefully triturated. The emulsion was streaked on the above media, and pour plates were made. Besides s. p. a. and xerosis bacillus in four cases very small dewdrop colonies appeared on about the third day, which did not enlarge in size. Transplantation was successful only on hemoglobin media. Two series of organisms have been cultivated to the sixth generation by frequent transplantations on hemoglobin agar. Control plants on serum agar were always negative.

Morphology.—Short, thin bacilli. The pour plates showed

s. p. a. colonies and particles of tissue which did not change. A more fluid medium was tried and plates were rapidly spread over with s. p. a. In brief the follicle contents were examined by many staining methods and cultivated on a large variety of nutrient media, with the only noteworthy result that in four cases an influenza-like bacillus was found.

BACTERIOLOGICAL EXAMINATION OF THE CONJUNCTIVAL DISCHARGE.

Only conjunctival discharge was examined in forty more or less recent cases of trachoma (no scars), and with the use of a hemoglobin containing medium. In four of these an influenza-like bacillus was found. Two of the series have been kept alive eight months by frequent transplantations on hemoglobin agar.

This influenza-like bacillus which was therefore found in eight cases presented the following characteristics: Small size, rounded ends, difficulty of stain—best with diluted carbol fusin. Grows only on hemoglobin media as small dewdrop bacilli scarcely visible. Does not grow on serum agar. The bacilli are non-pathogenic for rabbits, and subconjunctival injection in rabbits produces no lesion whatever.

It is evident that this bacillus agrees in every way with the one described by Müller, and which he has called the trachoma bacillus. Some cases were complicated with acute epidemic conjunctivitis. The Koch-Weeks bacillus was present, but 'Koch-Weeks and Müller bacilli were never found together. One of the most interesting cases presented the typical clinical picture of "acute-trachoma." In this case the greatest number of Müller organisms were found.

On the Occurrence of Influenza-Like Bacteria in the Conjunctiva.

Here the influenza group of organisms was described, including the influenza bacillus, the pseudo-influenza bacillus, the Müller bacillus and the Koch-Weeks bacillus, in which description the author confirms the experiments of some others and compares a true influenza series from a clinically well worked case of influenzal pneumonia with the apparently genuine influenza bacillus obtained from a case of conjunctivitis without other influenzal manifestations and with the Müller organism obtained from four cases of trachoma. The morphology was the same, the cultural conditions were the same, and animal experimentation was negative in all.

The writer concludes:

- 1. An influenza-like bacillus, identical with the Müller trachoma bacillus, was found present in eight out of 120 fresh cases of trachoma which he examined. It was present in the greatest numbers in a case of clinically "acute trachoma."
- 2. This organism could not be differentiated from the true or pseudo-influenza bacillus morphologically, culturally or by animal experimentations.
- 3. It seems probable that its presence in these cases of tra-
- 4. There is an influenzal conjunctivitis without other manifestations of influenza.
- 5. The Koch-Weeks bacillus is not identical with the influenza organism,

 H. G. G.

An Unusual Dilation of the Superior Temporal Artery and Vein of the Retina.

MILLIKEN, B. L., Cleveland, Ohio, (Archives of Ophthalmology. September, 1904). On October 7, 1899, H. H. C., aet, fifteen years, was brought to the office of the author by Dr. Payne of Cleveland, Ohio. The boy gave the following history: Had had an eye trouble for three or four years. Symptoms were aggravated by prolonged close work. Symptoms of asthenopia with blurring at times, pain in eyes, etc., not of marked character, however, and never incapacitating him from school work. The boy was slim but well developed for his age, and had never been sick. An examination showed vision normal in each eve. No muscular insufficiency, but low H. astig, with the ophthalmometer. The ophthalmoscope showed O.D. normal in every respect, and O.S. also with the exception of the condition described below. Both eves showed low H. On the 31st of December, 1899, the eyes were examined under atropin and the following conditions noted: Full refraction each eye= ± 1.00 D. giving vision $\frac{6}{6}$ each eye. Ophthalmoscope gave the following condition of left eve: Disc of good size, small pigment crescent at both outer and inner side, some retinal streaks, vessels are of good size and normal in distribution, with the exception of the superior temporal artery and vein. Beginning at the point of emergence, from near the center of the disc, both of these vessels were greatly enlarged, being fully three or four times as great in diameter as the other vessels and becoming more and more tortuous as they extend toward the equator of the eyeball. The vessels were of uniform caliber throughout their entire course. Adjacent to the vein in two or three of the loops were small dense black pigment deposits, and in one loop a small roundish patch

of apparet chorioiditis. The writer could find no reason in the eye itself for such a condition. Glasses +0.75D each eye were prescribed and the patient was directed to resume his usual school work. The patient was again seen on March 31, 1904. Apparently no change had taken place in the eyeground since the former examination. Patient had been at school continuously and now is doing full college work. Has had no special symptoms referable to the eye. By careful inquiry a history was ascertained of the patient having fallen and struck his head on the sharp edge of a plank, producing a wound requiring three stitches to close. There was no recollection on the part of the patient of having injured his eye at the time, nor is there any external evidence of injury to the eyeball. It is the author's opinion that the difficulty is due to some congenital defect and not to injury.

Albuminuric Retinitis.

Fox, L. Webster, Philadelphia, (N. Y. and Philadelphia Medical Journal. June 25, 1904), in a clinical lecture on this subject recently delivered at the Medico-Chirurgical College of Philadelphia, brings forward some very interesting data. Concerning its history, he states that the association of dimness of vision with kidney disease was first pointed out by Addison as early as 1839, and Landouzy, ten years later, made the statement that loss of vision was one of the initial symptoms of Bright's disease and appeared and disappeared with the appearance and disappearance of the albumin in the urine. As would be expected from a close examination of these facts. the structural changes in the retina were not recognized until several years later. This, Fox ascribes to the lack of facilities for examination of the eveground and recalls to our mind that the ophthalmoscope of Helmholtz had not vet been devised. He further tells us that Mackenzie as late as 1854, ascribed amaurosis to kidney disease and stated that in these cases the onset of the failure of vision was insidious and was attended by puffiness of the evelids and frequently by diplopia. It is refreshing indeed to encounter articles of this character. paper affords greater pleasure to the reader than that which contains references to the observations of the masters of ophthalmology in the past. Mackenzie is also quoted as having asserted that under the circumstances already mentioned the pupils were dilated, and that the patients complained of pain in the lumbar region, swelling and edema of the lower extremities, and of seeing as if through a veil. Truly, a perfect clinical picture. Fox also mentions the influence of Liebreich,

Mauthner and Helmholtz in perfecting the eveground pictures of this affection. Statistics regarding the frequency of albuminuric retinitis and the form of kidney disease with which it is associated are also given. An interesting clinical fact contained within this paper is that hypertrophy of the heart presents itself at about the same time as the ocular disturbances become manifest. In speaking of monolateral and bilateral albuminuric retinitis, reference is made to Yvert, who encountered left albuminuric retinitis in a man aged forty-eight years. in whom a subsequent autopsy showed an entire absence of the right kidney and a condition of large white kidney on the left In discussing this and the cases collected by Bull and Cheatham, this writer states that it must not be inferred that disease of one kidney precludes the possibility of bilateral retinitis. The typical fundus appearance is also given in detail in this paper. Of historical interest is the reference made to subconjunctival hemorrhages in this condition. Fox states that Talko as far back as 1872 observed them to precede the affection. In twenty-three cases of such hemorrhages under his (Fox's) personal observation it was impossible to detect any retinal or kidney changes, although at a much later date these became manifest. Hemorrhages into the lower lids may also occur, as has been shown by Samelsohn, in a report of a case in which hemorrhage into both lower lids preceded hemorrhagic retinitis, and Wharton Iones, long before the true ocular condition was recognized, described hemorrhage into Tenon's capsule, with exophthalmos and blindness. There is, sometimes, retinal detachment and folding of the retina in this affection, particularly in that form encountered in pregnancy, and strange to relate, recovery is not rare in these cases. The ophthalmoscopic appearances of albuminuric retinitis as described by R. Marcus Gunn and de Schweinitz are quoted. According to Fox, retinitis was shown to be due to a diseased condition of the walls of the retinal vessels by Gowers in 1876, Brailey and Edmonds in 1881, R. Marcus Gunn, in 1892 and again in 1898, and by Hertel in 1900. The blood changes incidental to retinitis are given in detail and this writer states that to his mind the alterations in the constituents of the blood are directly responsible for the changes in the retina since it has been repeatedly demonstrated that, in chronic interstitial nephritis in which the circulation remains normal, there are no blood changes of note, and retinitis is seldom present, but with loss of compensation of the already hypertrophied left ventricle, in these cases the blood becomes altered in its several characteristics and subsequent retinal changes take place. Reference is also made to the condition known as albumosuric retinitis. In three cases observed by Fox, the fundus reflex was yellow or pale saffron. Colloid dots were seen above and below the optic nerve, and white dots surrounded the macular region resembling somewhat albuminuric retinitis. Hemorrhages and whitish spots were scattered throughout the eyeground. Choked disk was observed in one case and in another diffuse retinitis was present. In treatment Fox speaks well of mercury and chalk (one to two grains) and gallic acid (ten to fifteen grains) in addition to the other well-known methods of treatment. The article concludes with reference to statistics as to the duration of the condition.

Experiments to Determine the Value of Collargolum and Antistreptococcic Serum in Infected Wounds of the Eye.

CLAIBORNE, J. H., and COBURN, E. B., New York, (*Medical News*, August 6, 1904). After a series of experiments on rabbits, the authors conclude:

- 1. Collargolum is ineffectual in preventing the spread of purulent processes in the eyes of rabbits, whether used intravenously or by injection into Tenon's capsule.
- 2. Antistreptococcus serum does not appear to exercise any favorable influence on purulent processes in rabbits' eyes.

M. L. F.

On the Mechanism of Exophthalmos.

McCallum, W. G., Baltimore, Md., and Cornell, W. B., Towson, Md., (Medical News, October 15, 1904). The authors have repeated the experiments of Boddaert with certain variations and have drawn the conclusions that obstructions to the outflow of blood from the veins of the orbit produces at once exophthalmos which is relieved by the establishment of a collateral circulation. As this is established slowly, the exophthalmos is in the meantime increased by the edema gathering in the orbital tissues. The exophthalmos produced by stimulation of the cervical sympathetic nerve is independent of any circulatory changes and is due to the peristaltic contraction of the orbital muscles. Nothing certain was determined regarding the mechanism of the exophthalmos in exophthalmic goitre.

M. L. F.

Adeno-Carcinoma of the Eyelids.

MILLS, J. M., New York, (Archives of Ophthalmology, September, 1904). The writer reviews the literature of this subject and reports the following case. Female, forty-five

years of age. Two years previously had had two growths as large as beans removed from the lid. These growths were painful and caused considerable discomfort. Soon after the operation other growths appeared and gradually increased in size. Some coalesced into larger masses which continued to grow and others formed until the entire eyelid was involved. When first seen by the writer the length, from outer to inner canthus, was 1 7-8 inches, the width of the lid from ciliary margin to evebrow 11/2 inches, the thickness at center from skin to mucous membrane 1/4 inch. Its outer surface was hard, irregular and nodular. The skin was adherent and of a reddish vellow color. The protuberances were in places smooth and glossy, in other parts shrunken and rough. The inner mucous surface was excavated and partly covered by nodules: other portions seemed indurated. Numerous furrows were covered by a yellowish secretion. There was a vascular keratitis with many small ulcers. Before the patient would consent to an operation, three months later, the lymphatic glands of the parotid region, about the angle of the jaw and in the neck had begun to enlarge. The lid was removed with the tumor. The wound healed without trouble.

Pathological examination: "Some of the Meibomian glands in the section are normal. In other places there is a marked round cell infiltration of the connective tissue stroma between the glands. Finally there are masses of epithelial cells packed in alveoli of irregular shape and size—some round or oval, others elongated and band-like. Many of the cells show kary-okinetic figures in their comparatively large nuclei and are more or less cuboidal in shape. Some of the small lymph vessels in the stroma contain epithelial cells in small numbers. Round cell infiltration is profuse and marked in the stroma. Some small blood-vessels contain hyalin thrombi. Diagnosis: Carcinoma of the Meibomian glands."

Two months later an attempt to remove the enlarged cervical glands revealed an inoperable condition of carcinoma.

M. L. F.

Giaucoma Simplex.

HORSTMANN, C., Berlin, (Archives of Ophthalmology, September, 1904). The writer believes that cases of glaucoma simplex, as the term is commonly understood, should be divided into two groups: one to contain cases of true glaucoma without marked inflammatory symptoms, which would more properly be classed with chronic inflammatory glaucoma; the other to include those typical cases in which there appear no

signs of inflammation or increase of tension. In the first group iridectomy is always indicated and is usually successful; in the other, the operation never yields the desired result and possibly may cause a more rapid approach of blindness. He does not believe the second group are glaucomatous. The symptoms they present are lowering of vision, defective fields and cupping of the disc. The first two symptoms are common to all diseases of the optic nerve and he reports four cases in which elderly patients had been under observation from six months to ten vears who had glaucomatous cupping of the nerves with preservation of normal vision, fields and color sense. In these four cases, as well as in nine cases of true glaucoma simplex, or as he prefers to call it, amaurosis with excavation of the optic nerve, almost all the patients had more or less marked arteriosclerosis and he suggests that perhaps this disease plays a part in the etiology. M. L. F.

A Peculiar Change in the Chorloid After Ophthalmia Nodosa.

Reis. W., Bonn. (Archives of Obhthalmology, September. 1904), contributes an interesting continuation of a clinical history published by Krüger in 1892. The patient was seen again in 1902. The injured eve had remained free from inflammation during these ten years, the vision had improved from 20/200 to 20/50, and it was not irritated even by an hour's ophthalmoscopic examination. A peculiar atrophic band in the chorioid began about one and a half papillary diameters below the lower margin of the disc and extended downward in a curved line. About the end nearest the papilla was an area of vellowish white or vellowish red color which gradually merged into that of the normal fundus. At the point where the band became vertical it was joined by a smaller, shorter band from above at an angle of 45°, forming a Y. The two arms of the Y differed not only in length, breadth and form. but also in color. The first mentioned arm had the appearance of atrophic chorioidal tissue, with thin deposits of pigment in places, while the smaller had a peculiar homogeneous appearance in its middle and upper part and gave forth a delicate green reflex. From the point where the two arms joined the first mentioned one became smaller and its edges of pigment broadened until they united to form an unbroken band of pigment which extended almost vertically downward for four or five papillary diameters to a mass of pigment from which a broader, ill-defined band stretched downward and inward and then downward until its course could no longer be followed. In the angle formed by the two arms of the Y was a little

isolated, rectangular, yellowish deposit. The course of the retinal vessels showed that this lesion was below the retina and in the chorioid. This appearance was probably due to the penetration into the chorioid of a portion of one of the caterpillar hairs which caused the original injury.

Bacteriology of Panophthalmitis.

Johnston, Richard H., Baltimore, Md., (Medical News, August 20, 1904), describes two cases of panophthalmitis in both of which pneumococci were demonstrated. One was a case of wound infection after cataract extraction performed with the usual antiseptic precautions some weeks after the patient had recovered from an attack of pneumonia; the other was the result of a stab.

M. L. F.

Yohimbin; Its Use in the Treatment of Eye, Ear, Nose and Throat Diseases.

CLAIBORNE, J. H. and COBURN, E. B., New York, (Medical News, July 9, 1904). After a series of experiments the writers consider the following conclusions justified:

- 1. A two per cent. solution of yohimbinspieger, either alone, or in equal mixture with adrenalin chlorid solution, dropped into the conjunctival cul-de-sac from five to six times in ten or fifteen minutes, will produce both corneal and conjunctival anesthesia. Marked anesthesia of the cornea lasts from thirty to forty-five minutes after the last instillation; the conjunctival anesthesia is at no time so profound as the corneal, and disappears several minutes before the latter.
- 2. There is a slight stinging sensation immediately following the instillation which becomes less and less with each instillation, finally disappearing altogether.
- 3. The eye becomes immediately suffused and continues red for more than an hour after the last instillation.
 - 4. There is no widening of the palpebral fissure.
- 5. There is a moderate but marked dilation of the pupil which comes on several minutes earlier after the last instillation with adrenalin and yohimbin in combination than with yohimbin alone, but lasts in either case from fifteen to twenty minutes.
- 6. The slight blurring of the vision for far and near appears to be due to spherical aberration rather than to paresis of accommodation.
- 7. Yohimbin alone or in combination with adrenalin, is an exceedingly mild mydriatic.
 - 8. Adrenalin when mixed in equal parts with yohimbin in

two per cent. solution, loses its constricting power upon the blood-vessels of the palpebral and bulbar conjunctiva.

- 9. This last-mentioned fact suggests the idea that yohimbin may be an antidote to adrenalin chlorid.
- 10. In view of the congestion caused by yohimbin, it cannot be considered the ideal anesthetic for operations involving the conjunctiva or muscles.
- 11. As an anesthetic in cataract extractions and in iridectomy, it would probably be effective.
- 12. On account of the congestion produced by it, yohimbin would be inferior to cocain as an anesthetic in all operations upon the eye.

 M. L. F.

Two Cases of Paralysis of the External Recti Muscles of the Eyes, Tabetic in Origin; improved by Operation.

Lewis, Frank N., New York, (New York Medical Journal and Philadelphia Medical Journal, October 22, 1904). The first patient was a gymnast, irregular in habits, apt to expose himself to cold air when perspiring after exercise, but not apparently syphilitic. The left externus became paralyzed in 1890. After other treatment failed a tenotomy of the left internus was performed in July, 1891. The patient then disappeared for 12½ years, during which time he followed the same occupation and had no trouble with his eyes. Then his right externus became paralyzed and he presented well marked symptoms of locomotor ataxia. The left externus, affected thirteen years before, now had good power. A tenotomy of the right internus was performed in December, 1903, and an advancement of the right externus a month later. A good result was obtained.

The second patient was a proof-reader with locomotor ataxia, possibly due to syphilis. Both externi were paralyzed. A tenotomy of both interni and an advancement of the right externus were performed. A month later another tenotomy of the left internus with advancement of the left externus. The result was parallelism of the eyes, or at times 2° of convergence, at 20 feet, but diplopia on turning the head to either side. In reading there was no diplopia. There was binocular single vision and the benefit to his appearance was marked. Eight years later the ocular condition remained practically as it was immediately after the operations.

M. L. F.

A Clinical and Statistical Study of Convergent Strabismus.

REBER, WENDELL, Philadelphia, (New York Medical Journal and Philadelphia Medical Journal, November 5, 1904). A

study was made of 166 cases of convergent strabismus for the purpose of contrasting the results of treatment applied before the seventh year with those of treatment applied at a later age. He finds that the squint is most likely to appear before the end of the third year, that there is an hereditary predisposition in nearly one-half of the cases and inclines to the opinion that such a disease as whooping cough may have influence in its production. A great refractive error has no special influence in determining the onset of the strabismus at an early age, nor in the production of a high degree of deviation. The meaning of amblyopia is discussed and is assumed to be for this article less than 1/4 of normal vision with correction of the refractive error. The amblyopia of squint the author believes to be due to non-use and presents as arguments in favor of this idea that it increases with the lapse of time, becomes both more frequent and more pronounced as adult life is reached, and that the vision of the amblyopic eve may be improved in 50 to 60 per cent, of cases by properly adjusted glasses. When taken before the fifth year strabismus can be cured by non-operative methods in 70 per cent., perhaps in the future 80 per cent., of cases. Such results cannot be obtained after the age of seven and after puberty there is small hope of influencing the stra-M. L. F. bismus by optical means only.

Associated Movements of the Upper Eyelid and Lower Jaw.

COBURN, EDWARD B., New York, (Medical Record, August 13, 1904). A boy of six presented a well marked ptosis of the left upper evelid, which was not under the control of his will. It was slightly raised when the boy puckered his lips and raised his evebrows. When he chewed, the lid rose and fell synchronously with the movements of the lower jaw. When the food was on the left side of the mouth the lid was only slightly raised, but when it was on the right side it was as fully elevated as when the mouth was opened. Movements of the jaw to the right caused the lid to be raised. When the mouth was opened the lid immediately rose to its maximum height. In vawning the lid was raised. Deglutition caused no motion of the lid. Movements of the tongue did not cause movements of the lid. The patient was unable to protrude the lower jaw very well. but in trying to do so the lid was slightly elevated. When the boy was speaking the lid trembled. When the right eyelid was held shut the left could be partially opened and could be raised still further by the aid of the occipito-frontalis. With the mouth open the lid appeared to be raised higher when the eyes were directed downward than when looking directly forward.

By contraction of the orbicularis the eye could then be almost closed. The movement of the lid was probably not associated with any movement of the eyeball. When the head was turned toward the left the lid was partly raised, but when turned to the right it remained down. There was a slight elevation of the lid when the chin was raised. Diplopia was found on the left side of the field with the image of the affected eye higher and to the left of that of the right. The images increased in height when the eye was turned toward the left upper field. No epicanthus, apparent abnormality or marked assumetry of the head.

M. L. F.

Report of a Case of Melano-Sarcoma of the Limbus in an Eye with Normal Vision, Followed by Enucleation.

Bell, George Huston, New York, (Archives of Ophtal-mology, Nov. 1904), describes a black neoplasm at the limbus, 6 mm. wide, 10 mm. long, projecting 3 mm. above the surface of the globe, involving about equally the cornea and the scleral conjunctiva, said to have appeared as a pin head point six years previously. Iris and fundus normal; vision 20/20. External rectus had become paralysed during the last six months. Left preauricular glands enlarged; no other glandular enlargement. A small piece cut from the tumor was found to be melano-sarcoma and the eye was enucleated, together with the paralysed external rectus muscle.

Microscopically the tumor was superficial, but sections showed a small amount of round-cell infiltration into the sclera and the outer layers of the cornea were involved to a limited extent. As the growth passed inward across the limbus it lay wholly between the corneal epithelium and Bowman's membrane. In this location it was densely pigmented.

A year after the operation there had been no recurrence of the tumor.

M. L. F.

Fuchs's Peripheric Atrophy of the Optic Nerve.

KIRIBUCHI, K., Tokio (Archives of Ophthalmology, Nov. 1904), after numerous studies of normal optic nerves, is of the opinion that the peripheric septa standing between the pial sheath and the longtitudinal septa, exist to furnish points of attachment for the transverse septa, and are developed mainly in the anterior part of the nerve because the transverse septa are there more numerous. The spaces between these peripheric septa and the sheath are filled with neuroglia tissue which Fuchs regarded as atrophic nerve bundles. This tissue Kiribuchi believes to be a glia mantle about the nerve which

is physiological and not to represent the network left after the atrophy of nerve fibres previously present, as Fuchs believed, nor a defective development of medullary sheaths as von Michel believed. If the glia mantle is considered physiological, its form and its sharp limitation from the nerve bundles is readily understood.

M. L. F.

Clinical Contribution to the Study of the Innervation of the Iris.

MAGNINI. DR. C., Turin (Archives of Ophthalmology, Nov. 1904), contributes his observations on the following case as an aid in the study of iris-innervation. A young man had a contusion of the eve. The vision was much blurred, not improved by glasses, but improved very much in time. pupil was not regularly round, but slightly distended toward the lower and inner side, where the iris was tremulous and the lens displaced a little toward the vitreous. There were some opacities in the lens, the vitreous was normal, the retina and chorioid showed no changes except a red suffusion in the macular region. The pupil did not react to light either directly or indirectly, but when the patient was compelled to look at approaching objects the convergence was normal and a great contraction of the pupil took place, yet it always remained a little larger than the other. even after eserin had been instilled. Whether accommodation was partly retained or not could not be determined. Four weeks later the vision had improved and the pupil had begun to react to light directly and indirectly. Two years later the pupil was a little larger than the other, reacted to light directly and indirectly and to convergence. The palpebral reaction could not be obtained; it seemed rather that the closure of the lids produced a dilation of the pupil. M. L. F.

The Important Clinical Points in Perimetry, with Special Reference to Traumatic Neuroses.

Wolffberg, Dr. L., Breslau, (Archives of Ophthalmology. Nov. 1904), makes the following points.

- 1. A visual field that is found to be normal in bright daylight should not suffer the slightest change in limits or continuity when the illumination is reduced. This holds good up to the degree of reduction of the illumination at which the fixation-object ceases to be visible.
- 2. In every visual process of the unmoved eye three functions are concerned to a greater or less degree, the dioptric, the photochemical, and the neuroptic.
 - 3. The influence of the dioptric apparatus is recognised

by the tests of vision employed in determining the refraction. That of the photochemical apparatus is recognised by tests in diminished illumination. That of the neuroptic apparatus is recognised on the one hand by exclusion after tests of the other functions, and on the other by a peculiar condition of the color sense.

- 4. The dioptric apparatus is of diagnostic value for the macula only, since errors of refraction can be corrected practically for it alone. For examining the photochemical apparatus blue pigments are best since blue disappears first when the illumination is reduced and since it is lost last in disturbances of the neuroptic apparatus. For examining the neuroptic apparatus red objects are best since the perception of red suffers quickly in cases of reduced excitability of the neuroptic apparatus, and since it is recognised better than blue in cases of disturbance of the photochemical apparatus.
- 5. The influence of the three sorts of apparatus upon the visual act affects not only the macula, but any portion of the field and the field as a whole.
- 6. The limits of the color fields can be considered normal only when the degree of illumination is known.
- 7. The color limits contract concentrically as the illumination is reduced, but if the photochemical and the neuroptic apparatuses are normal there will be no change from the normal sequence of the limits—blue, red, green. If the illumination is reduced sufficiently green disappears, then red, then blue and colors are no longer recognised.
- 8. A field taken in ordinary daylight which in its limits for white and colors corresponds to those obtained with a normal eye in diminished illumination is typical of diminished excitability of the neuroptic apparatus and of abnormal fatigue, thus of traumatic neurosis.
- 9. Traumatic neurosis consists in an abnormal fatigue not of the retina, but of the neuroptic apparatus including its cerebral centres. The fatigue found in the field as a whole also exists for the macula and is shown by the condition of quantitative perception of color.
- by the relation of the blue to the red limits. The preponderance of the latter over the former may not be manifest at every point in the field and by every degree of illumination. The perception of red exceeds that of blue in the entire field only in cases of idiopathic hemeralopia, and even in such cases the symptoms can be made out only when the illumination is greatly reduced.

 M. L. F.

The Gonococcus Theory.

URBAHN, DR. HERMANN, Berne (Archives of Ophthalmology, Nov. 1904), describes intracellular, biscuit-shaped diplococci of conjunctivitis which are stained by Gram's method. He has succeeded in obtaining the growth of gonococci in ordinary nutritive media. He believes that there are many varieties of these cocci, and suggests that a general collective name, such as biscuit-shaped cocci, should be given them. He sums up the results of his observations:

- 1. Gonococci can grow in common nutritive media.
- 2. Glycerin agar alone is not sufficient for a differential diagnosis. Jellied blood-serum in connection with glycerin agar may suffice to distinguish gonococci from similar cocci, especially from the meningococci and nearly related varieties.
- 3. There appear to be bacteriological differences between various stocks of gonococci.
- 4. It remains to be determined whether these differences exist clinically. Extensive researches are desirable for this purpose.
- 5. Whatever other differences may be found, the three characteristics of form, staining, and relation to pus corpuscles must be possessed by all varieties of cocci to enable them to be classed as gonococci.
- 6. The varieties hitherto described seem to be related to meningococci.
- 7. Until it has been determined whether or not the gonococci is a distinct variety with special characteristics, that name should be reserved for it alone, and the name pseudogonococci be avoided.

 M. L. F.

The Cortical Reflex of the Pupil.

HAAB, PROF. O., Zurich, (Archives of Ophthalmology, Nov. 1904), claims that many inaccuracies are current in regard to the pupillary reflex he described in 1885 and again in 1891, and makes an attempt to correct them. His description of the reflex is as follows:

"If, in a room illuminated only by a lamp or candle-flame, the light is placed so that it will shine laterally into a person's eyes while they look directly forward into the darkness, a marked contraction of both pupils takes place whenever the attention is directed toward the light, with no change in the position of the eyes. As long as the attention is directed to the light and the fixation of the eyes on the dark wall is maintained, the pupils will remain contracted, but as soon as

the attention is transferred to the point of fixation they dilate, although the quantity of light entering the eye has remained constant and all movements of accommodation and convergence are excluded."

This may be corroborated by other observations on oneself. either by means of the entoptic method or by watching the pupils in a mirror, or by inducing the phenomena in other persons. Haab argues that this is a pupillary reflex which is not excited by any of the causes ordinarily recognized as productive of contraction of the pupil, but is brought about psychically through a process which takes place in the cortex of the brain when the attention is directed to a bright object present in the field of vision but not at the point of fixation.

M. L. F.

Associated Movements of the Head and Eyes in Infants.

Hamill and Posey, Philadelphia. (American Journal of Medical Sciences, November, 1904,) report three interesting cases of nodding spasms of the head and rotatory nystagmus that appeared in their service at the Howard Hospital. These cases all occurred in children who showed some abnormality in the osscous system. The sutures of the head and the fontanelles were open in two of the cases, while the other was violin-breasted with some epiphyseal thickening. The head gave evidence of rickets in all of the cases.

They review some of the theories of the etiology of this condition, giving the principal advocate of each theory. Under the heading of *bredisposing causes* they have mentioned age. heredity and rickets. They mention as exciting causes dentition, gastrointestinal irritation, and traumatism. They are of the opinion that the head and eye symptoms are dependent upon some form of irritation of the cortical areas. The writers say: "The extreme rachitic manifestation present in all the cases marks this condition as the underlying or predisposing factor. The early age at which they became manifest and the striking rachitic condition which was present lead us to believe that the toxic products resulting from the disturbed metabolism due to the rickets were the irritating factors in these cases." The movements of the eves and the head were not similar, the movements of the head being slower and in an opposite direction, or different direction; neither did the one compensate for the other. The only apparent relation was that if the eyes were closed the motion of the head ceased.

Poisoning by Wood Alcohol.—Cases of Death and Blindness from Columbian Spirits and Other Methylated Preparations.

Wood, Casey A., Chicago, and Buller, Frank, Montreal, (Journal American Medical Association, October 1, 1904), have reported at length, under the above title, the list of deaths and cases of blindness following the ingestion of "Columbian spirits" and other forms of wood alcohol, as well as methylated "Jamaica ginger," lemon "extract," "bay rum," and many other domestic and proprietary remedies.

The symptoms varied with the amount consumed. Headache was mentioned in 19 cases as a conspicuous symptom, gastric pain in 11, nausea and vomiting in 26, dilated pupils in 20 of the 54 cases with tabulated records. From a study of the cases they have made a classification into three degrees of poisoning:

- 1. "An ordinary mild intoxication, with perhaps some dizziness, nausea and mild gastrointestinal disturbance, terminating in perfect recovery in a few days, but occasionally followed by more or less serious damage to vision.
- II. "A toxic effect more pronounced in every way, dizziness, nausea, vomiting and gastroenteritis being conspicuous symptoms. Dimness of vision, often increasing to total blindness, is characteristic of this degree of poisoning.
- III. "An overwhelming prostration which terminates in coma and death."

Some of the conclusions drawn are: To this date, at least 153 cases of blindness and 122 deaths have resulted from this poison; in all, 275 instances of lost life or eyesight. The injury to the ocular apparatus consists chiefly of a destructive inflammation of the optic nerve fibres or retinal elements (or both), followed by their atrophy. The blindness is bilateral and may set in a few hours after the inbibition of the poison, or it may be delayed for several days. It is generally complete, with a subsequent improvement, and finally, a relapse into a permanent blindness. The visual fields are contracted and exhibit absolute central scotoma. The ophthalmoscope reveals at first a congested nerve head, followed by grayish or white atrophy and contracted blood-vessels.

The treatment of methyl alcohol intoxication consists in getting rid of the poison from the stomach and intestines by means of the stomach pump and rectal injections. Stimulants, especially ethyl alcohol, strychnia, coffee and heat to the body and extremities.

O. W.

The New Ophthalmology and Its Relation to General Medicine, Biology and Sociology.

GOULD, GEO. M., (Journal American Medical Association. November 19, 1904), in his usual forcible way, has made a distinction between the "new ophthalmology" which recognizes a causal relation between the refractive conditions of the eve and general systemic disturbances and diseases, and the "old ophthalmology," whose limits of interest were ocular inflammations, ocular operations, and the ocular results of systemic diseases. The author observes how difficult it is to impress upon the general profession some of the well established facts in the field of the new ophthalmology. The writers on general medicine do not recognize the influence of the "eye strains" in general systemic disturbances. Many of the neurologists and stomach specialists have never discovered that their patients have ametropia. New truths in medicine are generally looked upon with skepticism and those who advocate the new truths are called "extremists." Owing to the nature of the article it is difficult to give it justice in an abstract, but it is replete with progressive ideas and is well worth careful reading.

O. W.

Retinal Hemorrhage as the First Manifestation in a Case of Diabetes.

NAGEL, C. S. G., (Ophthalmic Record, October, 1904), reports a very interesting case in which the retinal hemorrhage was the first symptom of diabetes. He mentions the ocular manifestations of diabetes in the way of Foerster's cataract. Hirschberg's central retinitis, suddenly and rapidly developing myopia, retro-bulbar neuritis, and the anomalies of the accommodation. The most strange feature of the case as reported was that the retinal hemorrhage came on in a patient apparently in perfect health, without any other manifestation of the diabetes The author says: "As to whether other ocular symptoms ever play the role of a first manifestation at all, I can merely give it as my general impression that such is but rarely the case. Leber states directly, regarding retinal affections, that they only come on after years, and that there never had been such a case recorded where at least emaciation and general decline had not been present."

An Investigation of the Blind Department of the Chicago Public School System.

CAMPBELL, I. F., Chicago, (Ophthalmic Record, October, 1904), makes a review of the work and progress that is being made in the blind department of the public schools of Chicago.

The system is especially interesting in that the blind children are placed in the school with the other children. They are first taught their alphabet by special teachers, who always assist them along as they may need assistnce to keep up with the other pupils. The child is placed in the class with the other children and takes part in all the exercises, using specially printed books and maps covering the same matter as the lessons of the other children. The child reads with the tips of the fore and middle fingers of the right hand, while he keeps the line with the tip of the left fore finger. They use the Braille system adapted to the American needs. Six dots, by different positions and combinations, make up the alphabet.

The author gives a most interesting report of the progress of the pupils and their advances, as shown by this report, are both gratifying and surprising. Many of these blind children are enabled to keep well up with other children of their age. There are twenty-eight children thus receiving their education, and the progress they are making compares most favorably with the work of the institutions for the blind.

O. W.

ABSTRACTS FROM FRENCH OPHTHALMIC

BY

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SEATTLE. WASHINGTON.

Operation for Symblepharon.

HOUDART, Brest. (Soc. Fran. d'Obhtal. May, 1904).

This was a case of tolerably extensive symblepharon, upon which two operations had already been made at previous times. Both times with the result that the case had become worse, the adhesion becoming more extensive.

Houdart made the third operation. He worked upon the idea of *encouraging* the union of the conjunctival wounds left after the dissection, by strong and close sutures; but especially by *delaying* as long as possible the healing of the raw surfaces necessarily left still uncovered after all the suturing possible. This he attempted by light and repeated cauterizations of the opposed raw surfaces.

He claims that the result answered the expectations. The attachment was not resumed. The movements of the eye were completely restored.

Ossification of the Lens.

AUBINEAU. Brest, (Soc. Franc. d'Ophtal., May, 1904). Aubineau reports two cases. In the first, the bony mass which had replaced the lens was united by a sort of membrane with a bony capsule, which doubled the posterior hemisphere of the eyeball. In the second case, the bony lens retained its weight (0.2 gm.), its form, and its dimensions.

The cell-elements of the bony portions, the osteoblasts, and the lamellar systems are clearly recognizable in the sections. The bony islets are separated by partitions of connective tissue, which enclose fat-cells, young cell elements, and numerous blood-vessels.

These intra-ocular ossifications he holds to be less dangerous in their role as foreign bodies than to the fact that they are always to be considered as resultants of an old iridocyclitis.

Security Given by Iridectomy in Cataract Extraction.

PECHIN. Paris. (Soc. Fran. d'Oph., Annales d'Ocul., June. 1904). Two points seem to be settled in the operation for senile cataract: the placing of the incision in the limbus, and the use of the narrow knife. But the indications and the counter-indications for iridectomy are still warmly debated. The simple operation is brilliant and seductive, but it leaves the eve open to the danger of iris-prolapse, even in the cases where the conditions for prolapse seem not to have pre-existed. The combined extraction, and above all with the iridectomy made prior to the extraction, gives the greatest amount of security: although this is not to say that with the combined extraction all dangers will disappear. Iritis and iridocyclitis may complicate the healing and endanger the result—and may be duc either to defects in the operative asepsis, or to the traumatism. The former may be avoided by a stricter technique. The latter can be obviated by treatment of any general diathetic condition (gout, rheumatism, diabetes, etc.) that would predispose to inflammations of the uveal tract in case of any traumatism to the iris.

Pathogenesis of Cataract.

GRILLI, Rome, (Soc. Fran. d'Oph., Recueil d'Oph., June, 1904). Grilli gives his conclusions based on the examination of the urine in 80 cases of senile cataract in Parisotti's clinic at Rome and controlled by similar examinations on 60 normal subjects of various ages. He found the daily quantity relative ly augmented, with a lowered specific gravity; diminished sediments; absence of renal elements; and a feeble osmotic tension, much lower than the normal. The cryosopic examination gave a pretty constant result of about 1.10; the normal in his controls and as given by other authors being 1.65. Most recent authors have investigated the etiology or pathogenesis of senile cataract by investigations on the eyeball, and have rarely sought for the cause in a general dyscrasia. Only Frenkel has found a certain diminution of renal permeability in cases of senile cataract; and these observations agree with those of Grilli.

Grilli reviews the recent studies on the nutrition of the lens, and the experimental results of injections into the anterior chamber, and comes to the conclusion that the analyses of the urine in cases of senile cataract that they are the subjects of sclerosis of the kidney: i. e., the senile kidney. There is, as a

rule, diminished elimination and increase of tension in the vessels. The diminished elimination of solids, thus retained in the blood, produces an increase of tension in this fluid and also in the fluids derived from it: lymph and the intra-ocular fluids. The lens, which is nourished by endosmosis, surrounded thus by hypertonic fluids, is itself deprived of fluids and consequently is dehydrated.

In the last analysis the phenomenon of dehydration of the lens is the essential factor in the development of cataract.

Clinical and Therapeutic Studies in Chorioido-Retinitis.

ABADIE, Paris, (Soc. Fran. d'Oph., Annales d'Ocul., June. 1904). These cases increase more and more, and are steadily becoming more severe. They appear usually in childhood. youth or early adult life. They frequently result from hereditary or acquired syphilis, although it is often impossible to assign a precise etiology.

The variations in the ophthalmoscopic picture are of secondary importance, for neither the impairment of vision nor the prognostic gravity stand in any fixed relation with the alterations in the fundus. Ordinarily the severest forms present only a diffuse clouding of the retina, without clearly marked patches. At times the pathologic process involves mainly the nerve. The disc becomes pale, and may be mistaken for that of an ordinary essential atrophy. In these cases of chorioidoretinal origin, however, the disc is partly or completely ringed by a band of variable width, more or less strongly pigmented. This is lacking in ordinary atrophy. The color-perception and the visual field are, moreover, better retained in this form than in the atrophies of other origin.

In the treatment one must resort to intra-muscular or intravenous injections of mercury according to the variety or etiology of the case. The mercury must be used without hesitation and in large dosage. An injection of 1 gm. of the following is used (intra-muscular):

Hydrarg. biniodid	1.
Potass. iodid	1.
Sol. serum physiolog. (70 per cent. NaCl)5	50.

Each injection therefore contains 2 cgm. of the biniodid. The intra-venous injections also render the greatest service, and one may reserve them for the cases that resist the intra-muscular injections. Abadie uses the cyanate of mercury:

Hydrarg. cyanat.						٠.						.5
Aquæ dest												50.0

One may begin with 20 to 30 drops (.1-.15) every second day. In extremely severe and urgent cases this injection may be made every day.

In these cases Abadie holds that the associated internal use of potassium iodid is more harmful than useful.

The subconjunctival injections alone are not sufficient in these cases, but they may be advantageously combined with the intra-venous or the intra-muscular injections.

The Vascular Lesions in Retinitis Albuminurica.

ROCHON-DUVIGNEAUD, Paris, (Soc. Fran. d'Oph., Annales d'Ocul., June, 1904). Many authors, especially in Germany, explain the retinal troubles as due to a primary degeneration (arterio-phlebo-sclerosis) of the retinal vessels, which causes all the lesions of which the retina becomes the seat.

To this Rochon-Duvigneaud makes two objections. The retinal lesions are not those which are determined by vascular obliteration, which always carries with it a degeneration of the internal layers of the retina. These are, however, conserved in albuminuric retinitis. That vascular obliteration is not frequent or important in this affection is proved by the retention of the visual field, and, in many cases, of central vision also. Second, one can not explain a primary vascular degeneration of the retina limited to this membrane, but only when coincident with similar degenerations in the whole organism. In autopsies these are not found, or only in insignificant degree.

He would explain these retinal lesions as due to the same causes as the arterio-sclerotic changes in other chronically inflamed organs. Probably the arteritis and phlebitis are consequences of the chronic tissue changes in the eve-ground.

This view is supported by the fact that the more or less altered vessels of a retinal patch, regain their normal integrity further out in the normal periphery of the fundus; and also by the fact that the central arterial and venous stems in the nerve trunk remain normal.

Inter-Retinal Commissural Fibres in the Dog.

Dupuy-Dutemps, Paris, (Soc. Franc. d'Ophtal., May, 1904). Dupuy-Dutemps exhibited sections showing the results of his experimental work. After destruction of one retina degenerated nerve fibres were found over the entire extent of the other retina. These were beautifully shown in the sections, stained by the Marchi method, made 18 and even in those made 9 days after the experiment. These were single fibres, showing no anatomical grouping into a bundle. They were scattered over the entire surface, but mainly to the temporal side.

After 3 to 5 months these degenerated fibres had completely disappeared, without leaving any trace. These observations support the views of Pagano, and make necessary the assumption that with the dog, at least, there is a system of nerve fibres passing directly from one retina to the other. Where these fibres take their origin and where they end in the retina is not settled—owing to their small number and difficulty of their study. 'According to Pagano these fibres are lacking in the fowl, pigeon, frog and the rabbit. They are very few in number in the cat, but are numerous in the monkey.

When this subject has been generally verified, and thoroughly worked out, it may possibly be found that there is an intimate relation between the presence of these fibres and the act of binocular vision

Conjunctival Tuberculosis Resembling Lymphoma.

CHEVALLEREAU AND CHAILLOUS, Paris, (Soc. Fr. d'Oph., Ann. d'Ocul., June). Man, aet. 25 years. Both lids of the left eye were greatly swollen and presented dilated blood-vessels. Conjunctiva of the lids was injected, but smooth; that of the ball was thickened, vascular and with prominent nodules. The semilunar fold was hypertrophied.

There was no specific history (and mercurial inunctions had no result). One testicle was enlarged, and was thought to be possibly sarcomatous. There was a swelling of the calf of the leg.

A bit was excised from the conjunctiva. Part of it was examined microscopically and the diagnosis of lymphoma was made, there being no apparent ground for the diagnosis of sarcoma or tuberculosis. One bit was introduced into the anterior chamber of a rabbit, and another bit under the skin of a guinea pig.

The patient was then forced to leave Paris; and later it was heard that he was in a provincial hospital under treatment for chronic bronchitis.

Seven months later the guinea pig died of generalized tuberculosis, and the rabbit had in the meanwhile developed tubercular iritis.

This case demonstrates the advantages, at times, of animal inoculations over even an apparently certain histological diagnosis

Tubercular Iridocyclitis.

Moissonnier, Tours, (Soc. Fran. d'Oph., Annales d'Ocul., June, 1904). Moissonnier reports a case in a child of 11 years,

in whom enucleation was necessary. The examination showed the entire anterior half of the globe to be infiltrated with numerous tubercles.

He gives a description of iridocyclitis tuberculosa, which

- 1. Acute inflammatory form in children.
- 2. Sub-acute form, without inflammatory reaction.

This second form may occur under two clinical varieties.

- a. Under the picture of a pseudo-tumor.
- b. Under the picture of an iridocycitis massiva, with the whole anterior half of the globe infiltrated.

It is evident that this case belongs to this last group, of which it forms a typical example.

The clinical appearances are those of an iridocyclitis plastica. The eyeball has always diminished tension (hypotony). All the constituent membranes of the globe are affected. The perforation takes place nearly always at the corneal limbus.

Ocular tuberculosis has been considered, at times, as primary; but Moissonnier holds that it is really always secondary. With a doubtful diagnosis, he recommends Morax's suggestion to prove the diagnosis by securing the reaction from an injection of tuberculin. Notwithstanding his view that ocular tuberculosis is always secondary, he closes by recommending enucleation (or the evisceration?) of the eyeball to prevent general infection. Eighteen months later this child had developed Pott's disease.

Visual Acuity and Earning Capacity.

At its last annual meeting the French Ophthalmological Society made this question the subject of their principal set discussion. Being necessarily based upon and determined by the French "Law of April 9, 1898," it has less of practical interest to Americans. We are singularly backward in having no statutory provisions on this matter. Sulzer submitted an elaborate report from the Committee. Its leading suggestion was for a standard unification of the tests for visual acuity (this we have noted above, vide these Annals, Vol. XIII, page 827); and this was further passed upon by the International Ophthalmological Congress at Lucerne. It and the discussion that followed brought out the important fact that it would be necessary to fix for practically every ordinary occupation. What is the usual visual acuity of the workers? What is the necessary visual acuity for that occupation? What impairment of v. a. is possible without lessening earning capacity in that particular employment? What ratio exists for that work between

grades of impaired v. and earning capacity in that work?

This will necessitate extensive and careful new examinations—especially in industrial centers.

The discussion brought out some independent reports, one of which, i. e., that of Truc on a Standard for Blindness, we noticed elsewhere (vide these Annals, Vol. XIII, page 826).

Five of the papers at this meeting were also prepared, it is evident, on account of their bearing upon this subject. Fortunately their extended titles will give a fair idea of their subject matter.

Teillais, (Nantes). Traumatic Hysteria in Ocular Lesions. Sourdille, (Nantes). On the Injury to One Eye, and its Influence upon the Working Capacity of the Other.

DRANSART, (Somain). Upon Late Appearing Complications of Apparently Insignificant Ocular Injuries. Their Importance in Relation to the Law of Compensation.

Bourgeois, (Rheims). Transitory Traumatic Myopia, caused by a forward Shifting of the Lens; and Permanent Cases, in which the Normal Position of the Lens is not Gradually Restored.

DESCHAMPS, (Grenoble). Partial Temporary Incapacity for Work, following Injuries of the Eye.

Spontaneous Displacement (Ptosis) of the Lacrimal Gland.

MAZET, Marseilles. (Soc. Fran. d'Oph., Annales d'Ocul. June, 1904.) The cases of spontaneous displacement of the lacrimal gland are extremely rare. The majority of leading authorities do not even describe this trouble, of which little is known of the clinical history, and especially of the causes of the very few cases published up to the present time.

Mazet reports a case he had observed and upon which he had operated with excellent results. A woman, aet. 32 years, presented upon the upper lid of the right eye a large oblique fold drooping down within and outside the lid, and bulging greatly at the external commissure. Within this actual sac one could feel a hard, oval and freely movable tumor. This was readily pushed beneath the upper lid and thus was easily reduced under the upper orbital border into its place in the lacrimal fossa.

It re-descended rapidly into the lid pouch if one did not maintain it in position with the finger tip.

It was absolutely indolent, and occasioned very little trouble except a certain amount of lacrimation, and a difficulty in lifting the upper lid; a sort of ptosis. There were no ocular or general antecedents to account for it, except that there was found at the orbital border of this upper lid a horizontal linear

scar, caused by a slight fall upon the angular edge of a hoop when she was 3 or 4 years of age.

It was treated by total extirpation of the orbital lacrimal gland. It gave an excellent result in the disappearance of the lacrimation and the tumor, restoring the mobility of the lid.

Marginal Tarso-Plasty for Trichiasis.

VILLARD, Montpellier. (Soc. Fran. d'Oph., Annales d'Ocul., June, 1904. In the surgical correction of entropion or trichiasis there are two leading indications: To relieve the abnormal incurvations of the tarsus, and to restore if possible the usually atrophic and defective lid-margin. The first indication is best met by the excellent operation of Panas. For cases of the second group, where the inturning of the eye-lashes is the dominant feature, and there is no incurvation of the tarsus, Villard proposes his perfected operation of marginal tarsoplasty. It comprises four steps:

- 1. Intermarginal incision. This is a splitting of the lidborder exactly as in the ordinary operation. The entire border of the trichiasis is completely split; or, if partial, a splitting opposite to, and slightly longer than the length of the trichiasis
- 2. The dissection of the lid flap. This is laid about 5 mm. from the lid margin, and is itself about 5 mm. wide. It traverses the entire length of the lid, remaining attached at each end, in the cases in which the trichiasis is complete. In the partial cases it is opposite and considerably longer than the intermarginal incision (to allow for the considerable shrinkage that takes place). In these cases it remains attached at the end opposite its respective canthus. From the base or bases short vertical cuts make connections with the intermarginal incisions.
- 3. Suturing together of the edges of the dissection wound left under the flap. Sufficient fine and close sutures are advisable, to make accurate coaptation.
- 4. Turning in of the flap through the little vertical cut, and suturing it into place along the intermarginal incision or groove. These sutures should be fine and numerous, the first being placed at the tip of the flap.

The results from a cosmetic standpoint are excellent, and V. claims that the relief of the trichiasis by this operation is perfect.

A New Local Anesthetic-Stovain.

Delapersonne, Paris. (Presse Medicale, No. 30, 1904).

This new local anesthetic, employed in the form of the chlorid, is a product of the animo-alcohol group and was introduced by Fourneau. DeLapersonne has given it sufficient experimental and clinical test to recommend its use.

Its toxicity is less than that of cocain. Three drops of a 4% aqueous solution dropped into the conjunctival sac of a rabbit produces lacrimation, hyperemia of the conjunctiva and slight miosis. After a minute conjunctiva and nictitating membrane become anesthetic, and this continues from 3 to 10 minutes. With three instillations at intervals of a minute or two the anesthesia remains for 20 to 25 minutes, the cornca being completely anesthetized; but there results a slight desquamation of the superficial epithelium. Personal experiments by his assistant, Dr. Mettey, showed that it produced a burning sensation, a feeling as if a foreign body were present, lacrimation, hyperemia of the conjunctiva and some photophobia. Three drops produced anesthesia of the cornea, and a slight disturbance of the accommodation.

DeLapersonne has made eighteen cataract operations, including four iridectomies, under its use. The anesthesia resulted in two minutes. The corneal incision was not felt, but the section of the iris was painful. A slight clouding of the corneal epithelium was observed in a number of cases, but this had no bad effect upon the progress of the cases.

By subcutaneous or subconjunctival injection he has used a 1% solution in four squint operations, six chalazion operations and three tarsorrhaphies. The anesthesia resulted in one minute. At the picking up of the tendon, or at the deep incision into the tarsal tissue, pain was felt—but not greater than is felt under cocain at the same points.

DeLapersonne is of the opinion that it has a useful field in ophthalmology. Its drawbacks are the pain, hyperemia, and the clouding of the epithelium. Its advantages are its strong and rapid anesthetizing power, and the absence of any influence upon the intra-ocular tension. When used as an injection its lesser toxicity and its greater diffusibility give it a very marked advantage over cocain.

In many cases a mixture of stovain and cocain solutions possesses a marked advantage over either used alone.

Opposite Deviation of the Head and Eyes.

GRASSET, (Semaine Medicale, No. 20, 1904). Grasset is strongly of the opinion that the hypothesis advanced and advocated by Bard that the occurrence of conjugate deviation of the head and eves in cases where there remains persistent

hemianopsia is due to the efforts of the patient to maintain the line of vision directed towards the intact halves of the visual fields, is not a satisfactory explanation, for all cases at least.

In one of Grasset's patients there presented left-sided hemiplegia, hemianesthesia, hemiopia, deviation of the eyes towards the right and of the head towards the left. At the autopsy there was found a hemorrhage into the thalamus opticus and the internal capsule. Grasset advances the explanation that this hemorrhage had produced a paralysis of fibres which turn the eyes towards the left, and irritation of fibres which turn the head towards the left.

According to his idea, both varieties of fibres have their paths in the thalamo-capsular zone.

Extraction of the Crystalline Lens in High Myopia.

LAGRANGE, Bordeaux. (Acad. de Med., Paris, June 7, 1904). Lagrange reports upon the results in a series of twenty cases of extraction of the crystalline lens for high myopia. All of these cases had been kept under observation for a period longer than two years after the operation. Quite a number were observed for several years longer than this. In no case was there seen any aggravation of the changes in the eye-grounds which had existed before, or at the time of the operation. In none of these cases has detachment of the retina occurred after the operation. [It is presumed that these were selected cases, and that it had existed in none at the time of operation, or before.] In a few cases vision improved to an amount twice or even three times that which had been present before the operation.

He is of the opinion that the operation should not be undertaken upon cases in which the myopia is less than 17 diopters in amount

Rapid Determination of the Light Sense (Photometry).

JAVAL, Paris, (Tenth International Ophthalmological Congress, Lucerne, September 14-17, 1904). Javal has constructed an apparently simple and efficient instrument. It consists of a tube (mounted on a stand) adjustable in length by a telescopic movement. One end is a simple eye-piece; the other end has set in a photographic negative composed of letters of varying size. These letters have not a solid ground, but are composed of black dots. These dots, in turn, vary in size in proportion to the size of the letters they form.

With transmitted light—the tube turned toward the sky or any clearly illuminated surface—the letters seem to be composed of a series of bright spots of varying size. The reading of these letters is thus dependent upon the light sense, and not directly upon the visual acuity. The comparison may be made in three ways. First, what size of letter is read—as compared with the reading of a normal eye under the same conditions. Second, how far the tube must be run in to enable the eye to make the same reading that the normal eye has made at the longer range. Third, with what regulation of the light the eye can make the same reading as the normal eye, and at the same distance.

[If Javal has given us a practical photometer for every day use—as good in its way as his ophthalmometer is in its—he will deserve unique credit. The only doubt that arises is due to the comparative nature of the test. One would feel more confidence in a purely physical test, based upon the measurable variation in the amount of light.]

Chromatic Aberration in Ametropia.

POLACK, Paris, (Lucerne Congress). Polack has made a series of investigations on artists; using as tests the pigments employed in their work. He found that even a slight ametropia had a very decided influence upon the perception of colors. He made a series of control experiments upon himself. using de Wecker's color-scale. With a weak convex glass red became deeper, yellow more orange and green took a slight vellowish tint. With a weak concave glass blue becomes deeper, green more bluish, and vellow took a slight greenish tint. He explains this upon the hypothesis that the eve is only able to accommodate exactly upon one at a time of the artificial pigments of which the colors are compounded. With spectracolors this phenomenon fails to appear. He advises that with artists a weak myopia had better not be corrected, while on the other hand a weak hypermetropia might even be overcorrected with advantage. With artists it is the so-called "warm" colors that are the important ones.

Bacillus Subtilis in Ocular Affections.

Gourfein, Geneva, (Lucerne Congress, 1904). Gourfein found in seventeen cases the bacillus subtilis, the cause of acute conjunctivitis; and in every case this was in out-door workers who had either had dirt thrown into the eye or had rubbed the eyes with the earth-soiled hand. The bacillus was found either alone or accompanied by staphylococci, strepto-cocci or pneumococci. Its virulence varied. It could be cultivated not only from the secretion, but even from bits of

earth remaining in the conjunctival sac. The clinical picture was in no sense characteristic; and the conjunctivitis subsided in six to eighteen days under applications of silver nitrate. As complications there occurred once a keratitis in an old corneal opacity; and once a marginal corneal ulcer.

Experimentally it was found that a prior trauma was essential, and that the conjunctivitis could only be produced when the culture was rubbed into the broken conjunctiva. To produce a corneal ulcer the culture had to be injected into the corneal parenchyma. Injected into the anterior chamber the culture produced only a mild sort of iritis; but into the vitreous, on the contrary, it produced a panophthalmitis of varying rapidity. Lacrimal sac inflammation could not be produced.

Operation for Senile Ectropion.

Terson, Paris, (Lucerne Congress, 1904). Terson reported 34 cases operated upon by the method he had proposed in 1896. It consists in the excision of the everted roll of conjunctiva—the edges of this wound not being sutured—and the removal of a triangular area of skin to exert a lateral tension on the lid. The base of this triangle is laid vertically along the outer orbital border. Where even greater tension is desired the base may be laid inclined obliquely outwards, so that when the edges are sutured together the strongest possible pull will be exerted upon the lower lid. He had had in all cases a good and permanent result, in 31 the success being complete.

It can usually be performed under local anesthesia alone, secured by subcutaneous and subconjunctival injection. As it does not invade either the lid border, the tarsus or the cul-de-sac, and leaves no deformity, it seems preferable to the older operations. It seems to assuredly rule out recurrences.

Lymphomata of Limbus and Lacrimal Glands.

Roller, Lyon, (Lucerne Congress, 1904). Rollet reports the case of a man, age 50 years, who presented in the right eye a pear-shaped epibulbar tumor of yellowish color. The broad portion encroached upon the cornea, and the narrower end reached up into the upper nasal cul-de-sac. Conjunctiva moved freely over it. At the upper and outer angles of each orbit were hard, flat tumors. evidently the lacrimal glands greatly hypertrophied.

With the bulbar tumor alone a diagnosis of fibro-sarcoma was among the probabilities; but the symmetrical tumors of the glands ruled this out, and made a diagnosis of lymphadenoma almost certain. Simple hypertrophy of the glands was practically ruled out in turn by the presence of the epibulbar tumor.

As the eye was already blind from an old post-variola leucoma it was enucleated, together with the gland of the same side. The eyeball presented, besides the tumor of the limbus, a small retrobulbar tumor at the entrance of the optic nerve. Intra-ocular structures were normal. Histological examination showed the tumors to be lymphomata of the lacrimal gland, and of the episcleral tissues. Tumor had not invaded cornea or sclera. There was no return and no increase in the undisturbed lacrimal tumor on the left eye.

Subconjunctival Injections.

DARIER, Paris.; DUFOUR, Lausanne; SENN, Wyl. and DIANOUX, Nantes, (Lucerne Congress: Archives d'Ophtal., October, 1904). These authors all remain loyal in defense of this therapeutic method. They employ either a 4% salt solution, a 1 to 2,000-10,000 sublimate solution with addition of some 2% salt solution, or a 1 to 5,000 solution of the oxycyanate of mercury. Their experiences vary from nearly 500 cases up to over 5,000 cases.

Under cocain the pain is not so very severe; but Dufour insists that not more than eight successive injections should be made. Dufour also insists upon the necessity of absolute rest after the injection, and at least two days' bandaging. They use this method with good results in interstitial keratitis, herpes corneae, infectious corneal ulcers, ulcus serpens with hypopyon, iridocyclitis with vitreous opacities, scleritis, and post-operative infections.

In corneal ulcers Senn is so sanguine that he considers that the cautery may be banished; and that panophthalmitis after ulcus serpens should be a thing of the past.

Etiology of Iritis.

CHEVALLEREAU and CHAILLOUS, Paris, (Lucerne Congress. 1904). The authors gave statistics based upon 131 acute cases: Seventy-six were male and 55 female. The greater number fell between the ages of 20 to 50 years, only eight being younger and 18 older than this.

As to cause: Syphilis was certain in 36, and probable in 13; gonorrhea, with complicating arthritis, in 9; articular rheumatism in 7; uterine affections in 8; and tuberculosis in 9. Diabetes, nephritis and grippe are represented by still smaller numbers. Although all old cases, where the etiology

presented special difficulties, were excluded, still in 27 out of 131 cases the causes could absolutely not be ascertained with any approach to reasonable certainty.

Transmission Path in Sympathetic Ophthaimia.

Motals, Angers, (Lucerne Congress: L'Ophtalmologic Provinciale, September, 1904). Motais holds that the anastomoses between veins of exit of the eyes are the most probable paths for the transmision of sympathetic ophthalmia.

There are present, both in the facial system—in the plexiform connections between the venae angulares of both sides; and in the intracranial system—in the connections between the sinuses—very extensive communications. This whole region is lacking in valves, so that with every venous stasis (violent exertion, defecation, etc.) there may be a back-flow of blood out of the larger venous branches into the eye again.

It is true that we have as yet no clinical evidence; and there have been no experimental researches to form a basis for this hypothesis. Motais thinks it likely, however, that ligature of the venae angulares would decidedly reduce the probabilities of the outbreak of sympathetic ophthalmia.

He illustrated his article by a series of injections of the facial and cranial veins.

In the discussions Leber remarked that as the "migration theory" and the "metastatic theory" had neither proven unassailable, the new view presented by Motais deserved the most careful consideration. That this described communication of the veins does exist has been demonstrated to him clinically, as well as being known anatomically. He had had a case of thrombo-phlebitis of the orbit that had passed over from one eye to the other.

Septic Ophthaimia with Abscess of the Liver.

HOUDART, Brest, (Lucerne Congress). Houdart had a patient in the Marine Hospital suffering from tropical dysentery. There developed a metastatic (purulent) ophthalmia, and, practically at the same time, an abscess of the liver. The intraocular suppuration presented the peculiarity of pointing through the lens, thus giving the clinical picture of an abscess of the lens. The eye was later enucleated. The intra-ocular pus showed staphylococci and streptococci, while Houdart was astonished to find that of the liver abscess sterile!

Early Discission (posterior) After Cataract Operation.

DE LAPERSONNE and POULARD, Paris, (Lucerne Congress:

Archives d'Ophtal. October, 1904). Notwithstanding the advocacy by Knapp and others, early discission has not become widely employed. The method of da Gama Pinto (Lisbon) for posterior discission was difficult of execution with the von Graefe knife, and De Lapersonne has improved the technic. He employs a fine pointed, sickle-shaped knife or needle with the cutting edge on the concavity for a short distance. cases where a thick after-cataract appears certain, he operates on about the twelfth day after the extraction. He enters the point about 2 mm, above the summit of the incision, directed at first towards the center of the eve. Then he turns the point forward and cuts the posterior capsule from behind. He makes an incision through this, and the edges at once gape freely. This separation is sometimes very considerable, the capsule disappearing behind the iris. In less successful incisions a V-shaped opening is left. In all of his cases a good black pupil was secured. No fluid was lost on withdrawal of the knife. and the broken up bits of lens material or exudate were soon absorbed. In all cases a thick after-cataract was prevented: and later good visual results were possible under proper

In the discussion da Gama Pinto stated that he had employed this posterior discission in numerous cases; but that as he had produced in one of his cases a detachment of the retina, he had returned to the anterior discission. This he made with the Knapp knife.

Chiorid of Ethyl for General Narcosis.

VALUDE, Paris, (Lucerne Congress, 1904). For short operations, requiring only brief narcosis, Valude recommends ethyl chlorid. A few inspirations will, within a minute, put the patient into a profound narcosis lasting three minutes.

About 8 ccm. may be simply emptied upon a square of folded gauze, which is held tight upon mouth and nose; or the same quantity may be emptied upon the gauze or tampon in a receiver or inhaler fitting tightly upon the face. If the narcosis must be maintained longer than three minutes, 3 to 5 ccm. must be again emptied upon the gauze or into the inhaler. It seems as if this may be again and again repeated.

Its advantages over the other anesthetics are: Its rapid action, absence of the stage of excitement, absence of vomiting, very rare occurrence of syncope, absence of after sickness and freedom from danger. That no anesthetic is absolutely free

from danger is shown by the fact that even with this one a fatal result occurs once in 7,000 cases.

Short operations may easily be performed; and Valude has performed an enucleation, an evisceration and a tenotomy.

Treatment of Glaucoma.

ABADIE, Paris, (Lucerne Congress). Abadie concludes his paper with a resume of the therapeutic indications in the various forms of glaucoma:

- 1. In the acute, sub-acute, inflammatory, painful with increased tension, and the paroxysmal forms—iridectomy; and waste no time on miotics.
- 2. In simple chronic glaucoma—miotics (pilocarpin by preference); and not iridectomy.
- 3. In those cases only where the miotics, or an iridectomy have failed—then section of the cervical sympathetic.

Etiology of Retinal Detachment.

GONIN, Lausanne. (Lucerne Congress). Based upon the anatomical examinations of 70 cases of detachment of the retina. Gonin comes to the following conclusions: For all spontaneous idiopathic detachments. Leber's theory is acceptable, with the supplementary proviso that the position of the retinal rupture is probably predetermined by a previous choriodo-retinal patch at the site. Retinal tears were observed ophthalmoscopically in 60% of the cases; and they may also occur without being visible. For the cases occurring with chorioidal tumors, retinitis albuminurica, and orbital absecss the theory is not satisfying. Even for the traumatic cases the theory is acceptable only for a small minority—in which there is added an inflammatory reaction of the vitreous, after its adhesion to the retina. In a large proportion of these cases the detachment is due directly to the traumatic rupture of the retina; or to hemorrhage beneath the retina. But above all. the cicatricial contraction of the wound gives rise to this sequel; especially when the wound is situated in the anterior section of the eveball. Sudden collapse of the globe from loss of vitreous may also be the cause.

Retinal Detachment in Retinitis Albuminurica.

GOURFEIN-WELT, Geneva, (Lucerne Congress). The anatomical examinations of two cases of double retinal detachment in subjects of albuminuric retinitis may be summarized: The post-retinal exudate comes from the chorioidal vessels, and is simply a dropsical accumulation analagous to the edema of

other organs; the finely granular exudate lying closely behind and in front of the retina comes from it. No actual pull was exerted upon the retina; for there were no attachments of vitreous to the retina. The detachment of the vitreous that was present was probably of later date. The ocular tension had not become increased during life.

Monocular Diplopia of Retinal Origin.

Constentin, Geneva, (Lucerne Congress). This author reports a very peculiar and intensely interesting case. In a case of perforating wound of the globe the entire upper half of the retina, from the ora serrata, had been detached. This half had nicely folded itself over upon the lower half. Thus it will be seen that the layer of rods and cones presented forwards. There was V-1/50 remaining, and of every object the patient received a fainter duplicate image lying directly below and inverted. Constentin probably very properly regarded this as the image projected by the detached and reversed retina; but some suggestions as to light that this case might throw upon the phylogenetic development of the vertebrate eye, and the origin of the ability to re-erect the inverted image thrown by the lens are not so conclusive.

ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

ВY

WILLIAM T. SHOEMAKER, M. D.,

PHILADELPHIA,

WALDEMAR E. FISCHER, M. D.,

SAINT LOUIS.

AND

CLARENCE LOEB, M. D.,

SAINT LOUIS,

Observations Upon the Frequency and Prevention of Ophthalmia
Neonatorum.

WINTERSTEINER, Vienna, (From the St. Anna Kinderspital in Wien. Wiener Klinische Woch., September 15, 1904).

Wintersteiner has collected the cases of ophthalmia neonatorum occurring in Prof. Escherich's clinic during the last 3 years. Out of 2483 children with eye diseases brought for treatment during this time there were 122 cases of ophthalmia neonatorum, or nearly 5 per cent., an alarming number in comparison with the statistics of other observers, collected by H Cohn in 1896. Cohn collected from various clinics in Germany, Austria, Switzerland and Holland, 1938 cases of ophthalmia neonatorum in 302,971 eye patients, or about 6 per thousand.

The highest numbers were:

Pflüger (Bern) 700 eye cases with 37 ophthal. neonat. per thousand.

Herz. (Wien) 1466 eye cases with 34 ophthal, neonat, per thousand.

Ransohoff (Frankfurt a. M.) 1084 eye cases with 24 ophth. neonat. per thousand.

Topolansky (Wien) 6300 eye cases with 21 ophthal. neonat. per thousand.

As of local interest, Wintersteiner mentions the statistics of other Vienna clinics, from Cohn's investigation.

Adler	7,646	eye	cases,	ophth.	neonat.	2	per	thousand
Bergmeister	1,476	eye	cases,	ophth.	neonat.	6	per	thousand
Fuchs1	5,949	еуе	cases,	ophth.	neonat.	3	per	thousand
Klein	2,528	eye	cases,	ophth.	neonat.	6	per	thousand
V. Reuss	3,616	eye	cases,	ophth.	neonat.	6	per	thousand

Herz's statistics are in the second place for Middle Europe, and his clinic was the same from which Wintersteiner has drawn his material with a rate of almost 50 per thousand.

Wintersteiner explains the much greater frequency of ophthalmia neonatorum in his clinic, which draws mostly from the western section of Vienna, not upon the supposition that gonorrhea is more prevalent, and hygienic conditions worse in this section, but by the fact that all the patients in his hospital are children with a maximum age of 13-14 years, suffering mostly from external diseases, while refraction cases and affections in adults so numerous in the other clinics are nil. To compare his statistics favorably, it would be necessary to consider only the children in the other clinics, and not the total number of patients.

Referring to Crede's prophylactic treatment Wintersteiner, from his experience, is convinced that this method alone is not sufficient to fullfil Cohn's prophesy that ophthalmia neonatorum can and must disappear from all civilized lands. The method is too often misapplied, but if properly applied Wintersteiner contends that it could not have prevented all of his cases, because: First, two children had the disease at birth, the infection being therefore intra-uterine, and prophylactic measures of course not in order. Second, in 40 of the 122 children, the disease first appeared after 5 days, i. e., in 7 cases on the 6th day, 6 on 7th day, 10 on 8th day, 4 on 9th day, 7 on 10th to 14th day, and in 6 in the 3d week.

Wintersteiner agrees with Küstner and his pupils that these late infections are to be considered as secondary, and are not caused at time of birth. On the other hand, Köstlin, Cohn and Lundsgaard consider all of these late developments as due to infection at birth, the organism possessing diminished powers of development and virulence. This Wintersteiner believes would explain a delay of a few days in the first appearance of the disease, but considers it very improbable that the organisms can remain latent for more than a week, or two weeks.

For the late cases Wintersteiner claims a secondary infection from the lochial discharges of the mother carried to the child while lying in bed with the mother. The place to study late infection is not the hospital, but the home, where hygienic conditions are quite different. All of Wintersteiner's cases of late infection were home cases, subsequently brought to the hospital.

For these cases prophylactic measures other than Crede's methods are necessary. They are based on a knowledge of the danger, a knowledge of the means by which infection can be transferred to the infant, and upon cleanliness. These three factors are well understood in lying-in hospitals, hence the few cases of late appearing ophthalmia neonatorum in these institutions. For the home confinements, those in charge must be instructed on these points.

Crede's method is a valuable and important measure in eye prophylaxis, and has saved many a child from blindness, but the dropping in the eyes once of a silver solution, is not sufficient to prevent a great many cases of blennorrhea, and other measures must be insisted upon. In handling these cases Wintersteiner follows Stellwag's method which is to wash out the conjunctival sac every hour or two with a 1-1000 solution of potassium permanganate, and to paint the conjunctiva once or twice daily with a 2 per cent. solution of nitrate of silver. With this treatment Wintersteiner claims perfect success in cases in which the cornea is not involved.

Papillitis and Amenorrhea.

HERBST, A., Vienna, (Wiener Klinische Wochen., Sept. 15, 1904). H. reports 2 cases of papillitis associated with amenor-rhea, which affections he believes resulted from a common intra-cranial cause, probably tumor or hydrocephalus. In the etiology of optic-nerve affections, the anomalies of the menstrual function doubtless play an important part, but the pathological influence of the latter upon the former is not sufficiently understood. According to Groenouw, the relationship between optic-nerve disease and the genital sphere is to be sought partly in nerve pathology and partly in the circulatory apparatus.

During the period of menstruation, changes occur in the blood pressure, in the blood quantity, and in the blood constituents, and perhaps also abnormal substances are formed, the products of metabolism. It is not strange, therefore, that, at this time, the optic nerve can also take part in the general disturbed condition.

The question now presents itself, if perhaps both the disturbance of menstruation and the optic-nerve affection are not influenced by a third factor which is as yet not sufficiently considered.

H. Yamaguchi, in reference to the early disappearance of the menses in akromegaly, reported three cases of optic-nerve

atrophy with amenorrhea, which were subsequently found to be cases of brain tumor in the neighborhood of the optic chiasm.

In Herbst's first case, the swelling of the disc subsided after lumbar puncture, which favors the Schmidt-Manz theory of papillitis; that it is due to intra-cranial pressure, followed by edema of the nerve-head, and a stagnation of the cerebro-spinal fluid within the nerve-sheath. Schmidt-Rimpler is quoted as citing numerous authors who have seen a recession of the swollen nerve-head after relief of the intra-cranial pressure by trephining. He, de Wecker, Brudenell Carter and Power, have also noted similar results from slitting of the nerve sheath and liberating the contained fluid.

Regarding the role of the amenorrhea, Herbst advances two explanations: First, it may be considered as the primary cause of the optic-nerve trouble, either directly or through the causation first of hydrocephalus. Second, it may be considered as being, together with the neuritis, the result of some intra-cranial disturbance. The latter explanation seems more acceptable to Herbst, because there was in his cases no recognizable cause of the amenorrhea as a primary disease. The first patient was a virgin at 20 years; there was no chlorosis, the blood count being normal, and she was of good color.

Herbst concludes, therefore, that the papillitis and the amenorrhea had in this case a common cause which probably produced increased intra-cranial pressure. He offers no explanation of how the amenorrhea was thus produced.

The second case is a similar one in a girl aet.17 years, with no demonstrable cause for the amenorrhea. There were, however, other symptoms indicative of increased intracranial pressure, which Herbst thinks was very probably due to tumor or hydrocephalus.

A New Method of Artificial Cataract Ripening.

Wolffberg, L., Breslau. (Wochenchrift für Therapie und Hygiene des Auges, Sept. 22, 1904).

In 1881 Förster first practiced artificial ripening of cataract by making a preliminary iridectomy, immediately after which he massaged the lens through the cornea with a blunt instrument. The method, although failing quite often, had many adherents, because when doing a preliminary iridectomy, opportunity presented itself for its practice. Previously, attempts were made at artificial ripening by puncturing the anterior capsule and making limited discissions. This was often followed by iritis, glaucoma, or infection. More recently, Jocqs practiced injection into the lens. Spataro (1900) experimented on 21 rabbits with Jocqs' method and produced 17 cases of severe iritis and 2 cases of glaucoma.

The practice of most clinicians at the present time is as follows: Unripe cataracts in both eyes seriously reducing vision, in patients over 60 years old, are extracted if the cases are otherwise favorable for operation.

If, for any reason, extraction is not immediately advisable, a preliminary iridectomy is performed on one eye, and the same with Förster's massage on the other. Few practice paracentesis or discission with massage in old cataracts.

Two conditions made Wolffberg feel the want of a certain method of ripening cataracts. First, persons between 50 and 60 years who, after preparatory iridectomy, show no decrease in vision or even better vision. Second, cases of excessive myopia in which after the second discission, no progress has been made. Four years' experience with the hot air douche in eye diseases, and based upon the publication of Meyhöfer on cataract formation in glass-blowers, has lead W. to believe that extreme heat is a helpful measure in artificial cataract ripening.

Meyhöfer found among 506 glass-blowers 59 cataract patients, 42 of whom were under 40 years of age. Out of 30 workers in a glass factory Hirschberg found 5 in the 40th year with cataract. Among 882 cataracts operated upon by Arlt up to 1856, 27 were in forge workers, and 12 in glass factory workers.

Hirschberg is of the opinion that the transparent lens, if exposed frequently and for a long time to high degree heat rays, undergoes fine changes which finally lead to opacity.

Hess found experimentally that heat destroyed the epithelium of the lens capsule, and this interfered with the nutrition of the anterior lens-fibres. An experiment occasionally practiced in operating upon animal eyes is to bring near the cornea a piece of red hot iron; the lens becomes opaque and can then be easily extracted.

Wolffberg uses a hot air douche apparatus. It consists of a spirit lamp, through the flame of which is passed a current of air into an asbestos tube. The air stream reaches a temperature of 100 degrees or even 170 degrees C. in a few seconds. By direct testing it was found that at a distance of 5 cm. from the eye, the temperature of the air was 80 degrees C. and at 10 cm. 70 degrees C. With the latter application, the eye unconsciously closes, the lids and surrounding parts become red, which redness lasts for several hours. There is considerable lacrimation which subsides after using hot stupes. W. seldom

continues the douche at this temperature longer than 5 minutes. To protect the respiratory tract, wet cotton is held in the mouth. Other indications for the hot air douche seldom require so great a temperature as does cataract ripening. W. has used it to quiet the pain of supra-orbital neuralgia and severe iritis, but with little success. The results in the latter affection were but momentary or nil.

Good results were obtained in scrofulous pannus, with blepharospasm and photophobia. Eugen Gottschalk used the hot air douche intermittently in some 10 cases of intoxication amblyopia, tabetic atrophy and neurasthenic amblyopia with interesting results. After 15 or 20 applications of a few seconds each, the vision and color sense improved and remained so.

Primary Malanosarcoma of the Eyelid.

Sommer, G., Niedermendig. (Wechenschrift für Therapic und Hygiene des Auges, Sept. 2?).

Sommer reports a case of primary melanotic sarcoma of the upper eyelid in a woman 82 years old. It is the 20th case of the kind in literature, there being 60 cases of primary lid sarcoma, most of which were leucosarcomata.

The auricular, throat and neck lymph-glands were not involved. The prognosis of this exceptionally malignant tumor, when situated in the eyelid, is relatively good, because it is recognized and removed early, and because the distribution of the lymph and blood-vessels around the lid is not so favorable for metastasis.

Methylatropin Bromid.

ARONHEIM, E., (Berliner Klin. Therap. Wochenschift, 1904, No. 28. Abs. from Wiener Klin. Wochenschrift, October 13th, 1904). Aronheim has found methylatropin bromid analgesic like morphia, anesthetic and mydriatic like atropin and cocain, and that it allays the itching of eczematous and nervous skin affections. In none of the cases in which it was used did it cause any unpleasant systemic disturbance.

Vaubel found that the use of 2 drops of a 1% solution caused a mydriasis of short duration, lasting only 4 to 6 hours. Winselmann experimented with methylatropin bromid, with and without cocain, upon the accommodation. He recommends a 25% solution without cocain.

A Few Forms of Secondary Conjunctivitis.

Peters, Rostock, (Ophthalmologische Klinik, October 25th, 1904). Peters speaks of several varieties of conjunctivitis

which are not produced by ectogenous infection, but by endogenous or ectogenous irritation. They require special handling therapeutically.

While, in the treatment of infectious diseases of the conjunctiva, antiseptics and silver and zinc preparations are useful, anything which is at all irritating must be excluded in the treatment of these secondary forms of conjunctivitis.

To these affections belong first the double-sided metastatic conjunctivitis which occasionally occurs in patients suffering from a posterior urethritis. Whether the affection manifests itself more as a swelling of the conjunctiva, or more as conjunctivitis with considerable secretion, which in the experience of Peters never contains pathogenic germs, for removal of all sources of irritation, and the simple application of cold compresses, Peters finds sufficient to bring the process to an end within a few days.

The conjunctival inflammation is not a direct manifestation of gonorrhea, but of posterior urethritis, which in the majority of cases results from gonorrhea. There are, however, undoubted cases of posterior urethritis without any evidence of gonococcus infection. It is therefore not right to consider the conjunctivitis as necessarily metastatic to gonorrhea.

Another form is found in gouty patients. The conjunctivitis ranges from slight hyperemia, to marked swelling of the conjunctiva with secretion. The secretion is mostly mucous, and contains no pathogenic microörganisms. Characteristic of this form of conjunctivitis are frequent exacerbations and recurrences. The first attacks usually heal spontaneously, or by the application of indifferent remedies. Examination of such patients will often show other and certain manifestations of gout, especially in the joints. The uric-acid diathesis, with its consequences in the digestive and circulatory apparatus, if found in patients with this form of conjunctivitis which is always bilateral, establishes the relationship between the conjunctival affection and gout. General treatment and attention to the mode of living are most important in this affection.

The use of irritating remedies in the treatment of slight conjunctival catarrh in these patients can cause more harm than good. Peters considers the so-called intolerance of certain patients to antiseptic and other local applications as largely due to the fact that they are gouty, and are suffering from this form of conjunctivitis. With the exception of gouty conjunctivitis, which is always double, and tends to recur, if there is one sided hyperemia and catarrh which defies the usual treatment, one must always think of an ectogenous cause.

Next in importance to the cases due to dacryocystitis come those caused by certain affections of the skin of the lids, and especially of the lid margins. There are frequent cases of eczema of the skin of the lid. especially near the inner canthus of the lower lid which is easily overlooked, accompanied by The fact that the simple powdering of this conjunctivitis. generally moist, and less frequently pustular eruption suffices in a short time to cure the eczema as well as the accompanying conjunctivitis, indicates that the process here is only an accompaniment of the lid-irritation. When the eczema has been overlooked, and the conjunctivitis treated with zinc or silver. or sublimate, the condition is made worse, aside from the fact that wet applications are contra-indicated in eczema. This form of conjunctivitis is found most in adults, phlyctenulae of the bulbar conjunctiva and cornea being associated generally with eczema of the lids in children. The tendency for irritating remedies to act unfavorably, disappears with the acuteness of the process. The relationship between chronic lid-eczema and conjunctivitis is therefore less pronounced, although the curing of a chronic blepharitis frequently causes the disappearance of the conjunctival affection.

The presence of mollusca contageosa on the free lid-margin, can give rise to conjunctivitis complicated even with corneal ulcers. Spontaneous cure has been observed to follow the removal of the mollusca.

Peters' experience teaches him that in practice, before chemical agents are used, the question must be decided whether perhaps the conjunctivitis is a double-sided one of endogenous origin, or a unilateral one secondary to some local lid-irritation.

In the first case treatment should be expectant, and in the second it should consist of removal of the source of irritation.

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A Newly Observed Symptom in Basedow's Disease.

JELLINEK, S., (Wiener Klinische Wochenschrift, October 27, 1904.) In an article upon the color index and properties of human blood, (Zeitserift für Klin. Mediz., Bd. 39, 1 and 2.) H. Rosin and Jellinek call attention to a new symptom in Basedow's disease. The symptom consists in a deposition of pigment in the skin of the eyelids. The pigmentation is brown diffuse, and evenly distributed in the skin of the lower, and especially in the upper lids. Above, it extends to the eyebrow, and below, to the infra-orbital margin. The conjunctiva is not involved. The phenomenon belongs often to the earlier symptoms of the disease, and in many patients becomes less distinct.

or in a few, disappears altogether as the disease progresses. This regular pigmentation of the lid is to be classed with the other pigment anomalies which tend to irregular distribution over the skin in Basedow's disease, myxedema, etc.

Schroetter reported an interesting case of Basedow's disease in 1903, in which there was extensive deposit, loss and change in the pigment, in the cellular tissue of the skin. He attributes the phenomena to secretion-anomalies of the thyroid gland and speaks of dysthyroidismus. Without going into the explanation of the symptoms, Jellinek calls attention to the blood changes which he and Rosin found in patients with Basedow's disease, notably difference between color-index and iron contained.

The blood changes in this class of diseases have a certain resemblance to those in icterus. With a normal number of red cells and a more or less diminished amount of iron, hemoglobin estimation was relatively increased. It seems therefore to Jellinek and Rosin that in the cases examined by them, the colorindex of the blood was increased, but not by pigment containing iron.

Does Eczema of the Conjunctiva Occur as a Localized Disease Only? Which Treatment Acts Most Favorably?

SCHIELE, A., (Wochenschrift für Therap, und Hygiene des Auges. September 8th, 1904. Schiele quotes in this paper the opinion of several authorities as to the distribution of eczematous phlyctenular, follicular, herpetic and similar lesions upon the conjunctiva. Thus, Meyer, in his text-book, says that phlyctenular conjunctivitis attacks only the scleral conjunctiva. Fuchs more recently says that lymphatic conjunctivitis is a localized disease of the bulbar conjunctiva, by which it distinguishes itself from certain other conjunctival inflammations, which are diffuse and spread regularly over more extended portions of the conjunctiva. Haab writes that the fornix and palpebral conjunctiva are never attacked by eczema. In these localities is found only an accompanying catarrh. Stellwag. writing of herpes conjunctivae (1861), says that only exceptionally are the lesions found in the fornix, or on the tarsal, or on the marginal conjunctiva.

Vossius (1903), says that phlyctenulae can form on the tarsal conjunctiva, several cases of which he has seen.

The infrequency of phlyctenulae upon any part of the conjunctiva other than that of the bulbus, has been well demonstrated. Greeff seeks to explain this selection anatomically as follows. The palpebral conjunctiva is covered with cylindrical epithelium and has more the character of mucous membrane,

but the bulbar portion is covered with a stratified pavement epithelium, and more nearly resembles in structure the outer skin. This difference Greeff considers of great importance pathologically. Processes which are found elsewhere in mucous membranes attack by preference only that part of the conjunctiva resembling true mucous membrane, or that conjunctiva only which is covered by cylindrical epithelium. Such for example are the lymphatic or follicular diseases.

On the other hand, skin diseases like eczema attack as phlyctenulae, the bulbar conjunctiva, in so far as its epithelium is similar in character to that of the true skin. Regarding the trachoma follicle, only in the beginning of the disease is it limited to the cylindrical epithelium-covered conjunctiva. According to Greeff, the trachoma bodies develop mostly first in the lower lid, where the infecting material collects on account of gravity. Here the follicle is generally found in a fold between the lid margin and the beginning of the tarsus, or in the fornix. The follicles develop here singly and have the greatest opportunity to spread. But according to Kuhnt, in 8 or 9% of trachoma cases, the disease starts in the plica semilunaris, which is covered with stratified payement epithelium.

Furthermore, in the later stages of trachoma, single follicles can often be seen on the bulbar conjunctiva, and occasionally masses of follicles can even be seen reaching down from the upper fornix almost to the corneal margin. Greeff admits that trachoma follicles can develop upon a stratified epithelium. Schiele's observations lead him to the conclusion that eczema vesicles appear not only upon the bulbar conjunctiva and cornea, but can attack also the palpebral conjunctiva, and in severe cases do so simultaneously. Eczematous inflammation of the conjunctiva is to be considered rather as a diffuse or confluent process, than as a localized one.

Schiele examines all conjunctivae with a loupe and has found that, especially with the more acute eczematous conjunctivitis, the eruption is not only on the bulbar conjunctiva, but can also be found at times upon the palpebral conjunctiva. In the upper lid, the vesicles are found most frequently between the lid-margin and the beginning of the tarsus. The vesicles are oblong, gray white in color, and can be evacuated by a little pressure.

The tops can be rubbed off with moist cotton, leaving flat ulcers. At times they coalesce. In other cases the lesions are more deeply situated in the tarsus and are infiltrated with lymphoid cells.

The character of the phlyctenulae of the conjunctiva of the

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lower lid is different. They are more firm, not experiencing so much pressure and irritation from the lid, and having more chance to solidify than those above. In severe cases of eczematous conjunctivitis the mucosa of the lower lid becomes much swollen, reddened, and diffusely or irregularly cloudy. The cloudiness is due to lymphoid infiltration from bacterial irritation

In scrofulous cases, besides the usual treatment and general care of the nasal eczema with boro-bismuth ointment, etc., Schiele uses in the larger children subcutaneously, injections of a 5% solution of the iodate of soda made in the temple, about every two days until 4 such injections have been made. One-third to ½ Parvaz syringeful is injected each time. If there is infiltration and ulceration of the cornea, he injects under the conjunctiva an entire syringeful of a 1% solution of sodium iodid to which has been added a drop or two of a 1% acoin iodid solution.

In other cases he uses a pencil of sodium iodid, or sometimes sulphate of copper, in conjunction with which he uses calomel, which lessens the pain of the copper. If calomel is to be used, the sodium iodid must of course be withdrawn. In severe cases of eczema accompanied with corneal involvement, swelling of the conjunctiva, photophobia, epiphora, etc., he resorts to linear cauterization of the fornix after the method of Schiess. A finely pointed stick of silver nitrate is drawn along the entire lower fornix after cocainization, the object being to cause a slough.

The little linear cicatrix which may remain is harmless. Linear cauterization is to be employed only where there is destructive corneal involvement. The modus operandi of the cauterization, Schiele believes to be not so much antiseptic as derivative, *i. e.*, the causing of a local leucocytosis. To eczema of the conjunctiva and cornea, belong the leashes of vessels, running onto the cornea, ending in a half-moon shaped infiltrated extremity corresponding to the margin of the corneal ulcer. These are treated, with the mitigated stick or actual cautery.

As antiseptic powders to be used in eczematous conditions of the conjunctiva and cornea Schiele recommends gallicin, iodogallicin, and bismuth oxviodidtannate.

Internal Squint With Special Reference to Heredity.

COHN, HERMAN, (Ref. from Wochen. für Therapie und Hygiene des Auges, Oct. 6th, 1904). After 40 years experience, during which time he has treated 2,000 cases of strabismus and

operated upon them more than 700 times, Cohn makes the following recommendations:

- 1. Until the 4th year, bandage the better eye for a few hours each day.
- 2. In the 5th year, correct with glasses, and commence stereoscopic exercises.
 - 3. Correct constantly the total hypermetropia.
- 4. Operate only for strabismus of the highest grade in the 6th year. Otherwise wait until the 10th year.
- 5. Promise betterment of position, but never binocular vis ion.
- 6. In strabismus of high grade, advance the external rectus. In a series of 27,000 cases of eye disease, he had 805 of convergent strabismus, 183 of which, or 23%, had relatives also with convergent strabismus.

A complete table is given showing the exact relationship of 172 of these kinsmen.

Examination of the School Children and University Students of Tuebingen.

Schleich, (Med. Korrespondensbl. Württemb. Reference from Wochenschrift für Therapie und Hygiene des Auges. September 29th, 1904). Schleich made a complete examination of the eyes of all those attending the schools and University in the town of Tübingen. The tests were most carefully carried out and separate records were kept for the two eyes. Of 4196 eves examined, 65.2% were normal and 34.2% abnormal. Male students had 63.2% normal and 36.2% abnormal eyes; female students had 67.6% normal and 32.4% abnormal eyes. The most favorable conditions were found in the earliest school years: the most unfavorable in the last years of the Gymnasium where there were only 28.2% normal eves. Myopia in the Gymnasium was 27.7%; in the Realschule 15.3%; in the Elementary school 2.3%; in the higher girls' school 6.5% and in the public school 4.5;%. The frequency of myopia increased with the school years, and the demands made upon the scholars.

The influence of heredity Schleich holds can only be definitely determined by special investigation in that direction. In the higher and lower schools he believes it is in the majority of cases not unfavorable. Near work as required in the schools is the cause of myopia. The school work is not alone responsible for all the damage done the eyes, however. Unfavorable domestic conditions exert a great influence upon the eyes and the general health of the children.

Protective Bandages for Ambulatory Patients.

Wolffberg, Breslau, (Wochenschrift für Therapie und Hygiene des Auges, Oct. 4th, 1904). Wolffberg describes his method of bandaging operated eyes which is as follows: His "open" bandage consists of a piece of gauze properly cut, placed over the eye and fastened to the surrounding tissues with pearl collodion. If the eye is to be fully bandaged, it is first covered with a small piece of lint, the soft side of which is covered with an ointment consisting of liquor ammoniae acetat. 5; vaselin and lanolin, aa 50. This ointment is cooling. Covering this is the gauze fastened with collodion. A little cotton is placed in the nasal angle, and a thin roller bandage 5 to 6 cm. wide, applied in the usual manner. Just prior to placing the first turns, a little of the collodion is put on the forehead and cheek, so as to fix the bandage at these points.

The bandage applied in this way has the advantage of remaining fixed next to the dressings, and not displacing them. Wolffberg recommends for the tailed bandage so frequently used in the ambulatorium, an oval piece of material which combines softness and firmness, having at each end a slit through which is passed a tape. The advantage of this form over that in which the tapes are sewed at the ends, is that the shape is maintained and the pressure is more uniformly applied. The constant pulling of the sewed tapes, soon tends to reduce the soft bandage to a string, causing discomfort and unequal pressure.

Oculomotor Paralysis and Sudden Death Due to an Aneurysm of the Internal Carotid Artery.

BEYKOVSKY, (Wiener Med. Wochen., 1904, No. 19, Ref. from the Wochen. für Therapie und Hygiene des Auges, November 3rd, 1904.) This patient, a woman 40 years of age. suffered a sudden complete isolated right-sided oculomotor paralysis. She had had headache for some time previously. During the examination she became suddenly unconscious, and in a short time died. Autopsy revealed old hemorrhages in the right temporal lobe, and a layer of freshly coagulated blood beneath the dura, which had evidently come from an aneurysm of the right internal carotid, about the size of a pea. wall of the latter was yellowish white, partly calcified, and in parts thin and transparent. In the under surface was a rupture about 2 mm, in diameter. It was bound fast to the oculomotor, and had flattened it into a band. The surrounding tissues were pigmented, from old hemorrhages. At a corresponding point upon the left carotid was also an aneurysm,

which was however, a little smaller. With exception of considerable fat in the heart muscle, it was otherwise normal.

The patient had had for more than 2 years previously attacks of severe headache, always in the right temple, and generally accompanied with vomiting. She had been, during this time very excitable. Fourteen days before death she complained of right-sided headache: six days later she had paralysis of the right levator palbebrae superioris, followed in a few days by paralysis of the external ocular muscles, and 24 hours before death, the internal muscles for the right eve also became paralyzed. It is interesting to note that while there was no disease of the blood vessels throughout the body, there were aneurysms at exactly corresponding points of the internal carotid arteries. Bilateral aneurysm is very seldom seen. In this case, there were no signs of atheroma or of syphilis. Beykovsky asks if in this case, after a long standing hemicrania, the sudden appearance of ptosis, followed in a few days by complete oculomotor paralysis, were sufficient to make the diagnosis of aneurysm of the basal carotid artery?

He mentions as conditions sometimes accompanied by, or followed by, oculomotor paralysis, fibroma, neuroma, aneurvsm, malignant tumors, chondroma, exostosis, gumma, tubercle, diabetes, measles, scarlet fever, diphtheria, influenza, typhus, intoxications (nicotin, alcohol, lead, carbonic acid gas, meat and sausage poisoning), tabes, bulbar paralysis, multiple sclerosis, apoplexy, traumatism and hysteria. A great number of these diseases could be excluded. Pressure could be at any point in the oculo-motor nerve, from the nucleus to the end filaments. Orbital disease was in this case very unlikely, because there was no chemosis, exophthalmos, or pain on pressure which are rather constant symptoms of orbital tumor. The differential diagnosis between a cerebral and a basilar lesion cannot always be made. He holds it to be most probable, however, that an unilateral total oculomotor paralysis, without other cerebral symptoms is due to a lesion at the base. Whether the lesion is fibroma, neuroma, bone tumor, or aneurvsm, cannot be determined. In his case, paralysis of the internal ocular muscles followed in a few days paralysis of the external muscles. He offers as a possible explanation of this point, the fact that the fibres supplying the inner eve muscles run in the axis of the nerve, and are therefore better protected from pressure.

There were no visual disturbances in this case. In a few cases previously reported, choked disk, optic neuritis, sub-retinal hemorrhage, hemianopsia, etc., were observed. It is

evident that, so soon as the aneurysm encroaches upon the near-by optic nerve, visual disturbance can follow. Attention is called to the thinness of the aneurysm wall, a slight pressure sufficing to perforate it. This might accidentally be caused by a blow, or by medical manipulation, for example by the electrical treatment of muscle paralysis.

The Medical, Mechanical, and Operative Treatment of Trachoma.

THE METHODS OF PROF. HERMAN KUHNT, OF KÖNIGSBERG, DOMOTOR. (Pester Medizinisch-Chirurgische Presse, 1904, No. 41, Ref. from Wochen. für Therapie und Hygiene des Auges, October 27th, 1904). I. Local medication is used. (a) Early in the case, (b) Later in the case, during acute exaccerbations. Acetate of lead, and especially nitrate of silver, 2% solution, are indicated when the conjunctiva is loose and secreting freely. After these applications, the conjunctival sac is flushed with normal salt solution. Atropin and cocain combined in an ointment are frequently used. Sublimate is used 1-5000; protargol in the form of a 10% glycerin solution.

II. In the treatment of chronic trachoma mechanically, expression of the follicles with Kuhnt's expressor plays the principal role. Expression is indicated when the granulations are softening, which is recognized in the superficial layers, by a yellowish or yellow gray discoloration. This takes place in the second stage, or in the transition from the first to the second stage.

Expression is contra-indicated, (1) In acute trachoma, (2) In the first stage of chronic trachoma. In the first stage of granulation, there is no difference in consistence between the granules and the surrounding mucous membrane. If something is to be expressed from a mucous membrane, it must be either harder or softer. Hardening of the granulations does not take place, but softening does.

Expression with Kuhnt's forceps is less painful than expression with the finger or with Knapp's roller. Under mechanical procedures, Domotor mentions massage with yellow ointment, and with copper, also the galvanocautery. The latter is the best method to attack isolated granulations.

III. Prof. Kuhnt practices as a rule one of three operative procedures: (a) Simple excision (Richet-Galezowsky); (b) Combined excision (Jacobson-Heisrath); (c) Extirpation of the tarsus (Kuhnt). Removal of a strip of the infiltrated fornix is simple excision. If with this, a part of the tarsal conjunctiva is also removed, the operation is combined exci-

sion. The latter is done only on the upper lid. On the lower lid, only simple excision is practiced, except in the late stages, when occasionally the tarsus is removed.

Simple excision is seldom applicable to the upper lid, because the granulations are not often limited to the fornix. Simple excision in suitable cases is followed by surprising results. Subjective symptoms and secondary changes in the cornea. (pannus, abscesses) quickly disappear.

The indications for Kuhnt's operation are as follows:

- 1. In all chronic cases, in which, besides characteristic conjunctival infiltration and granule formation, in the fornix, and lid, there is at the same time infiltration and thickening of the tarsus. This holds good whether or not the cornea is also involved.
- 2. When there is extensive chronic granulation in the fornix and palpebral conjunctiva, and without special changes in the tarsus, provided the cornea is attacked, or is threatened.
- 3. When there is typical thickening of the tarsus, together with a destructive softening of the granulations in the fornix.
- 4. Even in cases in which granulations in the fornix are already cured, where the palpebral conjunctiva and tarsus show gelatinous granulation, and the cornea is involved, or is in danger.

The contra-indications for Kuhnt's operation are:

- 1. Early cases without serious corneal complications.
- 2. When the stage of cicatrization has been reached, and the granular process in the conjunctiva has ceased, or is ceasing.
- 3. When there are indications of shrinking in the conjunctival sac.

The operation of excision has many opponents, who argue that it is not perfectly indifferent if pieces of the fornix, and of the palpebral conjunctiva, or the tarsal cartilage itself, be removed; that these structures are of importance for the protection of the eyeball. Kuhnt asks if it is better to suffer with this disease for years, with its dangers of infection, and its ultimate danger to vision, or in a short time, 4 to 8 weeks, by this operation to be free from it.

Regarding the removal of the tarsus, which is opposed by so many, attention is called to the fact, that, when trachoma continues for a long time, the tarsal conjunctiva and tarsus itself, are both attacked and seriously disorganized. Regarding the destruction of the Meibomian glands, they become without the operation atrophied in long standing trachoma.

The tarsus can by trachoma, according to Kuhnt, undergo the following morphological changes.

- 1. The tarsus which is larger in all dimensions, can gradually shrink, until finally, only a narrow band, 2 to 3 mm. broad remains at the lid margin.
- 2. It can retain its enlarged condition, shrinking a little and losing its elasticity, and finally undergo a calcareous degeneration. Such a condition gives ries to entropion and trichiasis.
- 3. Occasionally, the infiltrated tarsus can undergo softening and necrosis. Small abscesses have been observed to form in it. The removal of the tarsus is then necessary to avoid deformity of the lid, and to preserve the cornea.

Kuhnt believes that combined excision is the best prophylactic against pannus. He has performed excision 5,000 times and believes that by it.

- 1. The course of the disease is greatly shortened.
- 2. Secondary corneal disease is hindered, and when present is more quickly cured.
 - 3. The mechanical ptosis is corrected.
 - 4. Recurrences are less frequent.

The opponents of excision claim,

- 1. Too much stretching and shrinking of the conjunctiva.
- 2. Limitation of ocular movements.
- 3. Serious cicatrization.
- As to 1. It can be prevented by operating only upon eyes with sufficient conjunctival sac, and by not excising too much.
- As to 2. A properly performed operation never removes enough conjunctiva to make restriction of the ocular movements possible. Kuhnt has never seen it.
- As to 3. Only the conjunctiva or tarsus are excised, and the deeper tissues, muscles, etc., are avoided. The resulting scars are therefore superficial.

Ophthalmological Miscellanies.

KAUFFMANN, Ulm. (Wochen. für Therapie und Hygiene des Auges, October 27th, 1904). Strychnia. Fuchs in his text-book, 1889, says that strychnia was first used in ophthalmic practice by Nagel in the treatment of the optic-nerve affections. Kauffmann calls attention to the fact that strychnia was used in ophthalmology before Nagel, but not hypodermically. It was used by Elliotson in London in 1836. It was given as a stimulant to the optic nerve, in cases without signs of ocular inflammation complaining of indistinct vision. He also used it in a case of hysteria. It was in hysterical forms of visual disturbance that Nagel observed his best results from its use.

Thermometry. Rosenthal determined that there was a distinct rise of temperature of the cornea following a lime burn. Before this Giese and others had made temperature measurements of the conjunctival sac, but variations in the bodily temperature in relation to different disease of the eye, were little considered.

Kauffmann argues for the more frequent taking of the bodily temperature in ophthalmic practice, as being important in establishing the relationship between general and eve diseases. Endogenous infection could thus be better explained and recognized. Further insight into the participation of the entire organism in many eve diseases, tends toward a classification of many eve diseases, according to etiology, and not according to symptomatology. This would be furthered by a more careful study of the general temperature. A priori, it is evident that a large abscess of the lid, or cornea, or a pus collection within the eve, is attended by fever. Also, other eve affections not suppurative show variations in the general temperature. and Kauffmann believes that if more were known about these temperature variations, we would be able to recognize the type, and to recognize endogenous affections. His own observations demonstrate that, in the so-called lymphatic affections of the conjunctiva and cornea, the body temperature is constantly above normal. The fever continues until the efflorescence subsides, and with a new crop of lesions, comes a return of temperature.

The treatment of lime burns by water irrigation. This was practiced by Dr. Arthur Jacob, in Dublin in 1836.

He stretched the patient upon the ground, forcibly opened the lids, and directed upon the eye a stream of water from a teakettle. His treatment was opposed because it was said that the water dissolved the lime, and spread it further over the eye so that it would do more harm. Jacob thought that lime was not sufficiently soluble in water to make this objection valid.

A Newly Observed Eye Symptom in Diabetic Coma.

KRAUSE, Breslau, (Ref. from Wochen. für Therapic und Hygiene des Auges, Nov. 10, 1904.) Krause has observed in 3 cases of diabetic coma, pronounced hypotony. It commenced 15 to 32 hours before death, and seems to be only present in the coma of diabetes, as it was not found in 4 cases of coma from Basedow's disease, Addison's disease, and uremia. It may possibly be of differential diagnostic value.

No explanation of the hypotony is given. It was not found

in 80 cases post-mortem, or in 18 living cases of diabetes. It is not produced by increased or diminished blood pressure, or by withdrawal of water from the organism. Anatomical examination of the eyeball showed nothing abnormal.

Hemorrhage Into the Cornea.

RICHTER (Obhthalmologische Klinik, August 20th, 1904). Richter reports a case of intra-corneal hemorrhage in a child 4 days old, brought to his clinic with ophthalmia neonatorum of both eyes, which was cured in 24 days. The child had general cyanosis, due to a heart anomaly, which showed itself especially in the head, lips, lids and cheeks, whenever it cried, The sclerae were not cyanosed, as has been observed by Fehr in cases of congenital heart malformation, under the name of cvanosis bulbi. The cornea of the left eve was smooth and glistening, but perfectly non-transparent. The color in this case is described as bronze (other authors describe it as chocolate). The discoloration reached to the corneal margin, leaving no portion of the cornea free. Size and tension of the eveball at all times normal. After 8 days, the color changed somewhat, owing to central raising or blistering of the epithelium: it became intensely green, with vellowish points intermixed. The epithelium re-attached within a few days, the color remaining about the same. There was no return of transparency, it being impossible by focal illumination at any time to see the anterior chamber or iris. The discoloration was, however, seen to be perfectly homogeneous.

The child died on the 28th day; no autopsy. The etiology in this case is obscure. There was no injury at birth. Richter believes the hemorrhage to have occurred during intra-uterine life. In previously reported cases, the chocolate color always appeared a short time after the intra-corneal hemorrhage.

The question of intra-uterine traumatism, Richter mentions without further comment. The relationship between the heart anomaly, which caused the cyanosis in this case, and the corneal hemorrhage, he regards as an hypothesis which cannot be proven. The cause of the discoloration, he is also unable to explain in this case. The theory of Treacher Collins, is a diffusion of hemoglobin from the anterior chamber through Descemet's membrane into the cornea, where it changes into hematoidin and hemosiderin. This theory requires a break in the continuity of Descemet's membrane, or at some point more peripheral, as in the wall of Schlemm's canal (Scheffels). That this can cause hemorrhage into the cornea has been proven by cases. Richter calls attention to a point which he considers

important in the etiological diagnosis: viz., that in a few cases there was a brown discoloration of the entire cornea, while in others there was a ring of cornea not involved.

For the literature on this subject, see Frank, Inaugural Dissertation. Rostock. 1902.

Can Glaucoma be Cured with Adrenalin Without Operation?

GRANDCLEMENT, Lyon, (Die Ophthalmologische Klinik, August 20th, 1904). From a number of cases which he has treated, Grandclement is convinced that the majority of cases of glaucoma, and even secondary glaucoma, is curable by the use of adrenalin, and without operation. In order to reach such a result, 4 rules must be observed.

- 1. The glaucoma must be in the early stages, and no organic changes must have taken place in the ciliary body, the iris, or above all in the angle of the anterior chamber.
- 2. Adrenalin must be dropped in the eye every half hour without interruption, until the eyeball has become soft. This requires about 3 days.
- 3. With the adrenalin must be combined eserin. Adrenalin limits the hypersecretion of the aqueous humor. Eserin aids the exit of the aqueous through the filtration angle, by opening the spaces of Fontana.
- 4. As soon as the intra-ocular tension is reduced, the adrenalin must be withdrawn, or at least used very sparingly, otherwise there is great danger of producing a permanent hypotony.

Adrenalin is a powerful constrictor of the peripheral vessels; the blood is driven into the more central vessels, and in them the pressure is distinctly raised. The vaso-constrictor effect of adrenalin is of short duration, scarcely lasting half an hour, as the drug rapidly oxidizes within the organism, and is destroyed.

A long continued use of adrenalin is not without danger, as it rapidly causes changes in the vessel wall, atheromatous in character. This is especially true with the larger vessels, notably the aorta. It is for this reason that some pathologists have thought that atheroma can be caused by hypertrophy and hypersecretion of the supra-renal bodies. Also locally applied in the eye, adrenalin is not an indifferent remedy. It can if overused produce permanent hypotony, which Grand-clement has observed in one case.

In ophthalmology, adrenalin as a reducer of tension has not as yet been systematically used. Its use as an energetic hemostatic is well known. Another use for it is to increase the anesthetic effect of cocain and acoin. This is done by causing anemia of the superficial tissues of the eye. Finally adrenalin accelerates the absorption of mydriatics and miotics. It is contra-indicated in all diseases requiring for healing hyperemia and lymphocytosis, as for example ulcerative processes of the cornea. In these conditions dionin is indicated, and is as strong a vaso-dilator, as adrenalin is a vaso-constrictor. S.

The Treatment of Myopia.

SCHMIDT-RIMPLER, (Die Ophthalmol. Klinik, August 20th, 1904). The author considers in this paper the lens-correction of myopia, and removal of the crystalline lens, (Fukala's operation.) He does not believe with Sattler, that myopia as low as .75 D. should be given a constant correction. The pressure action of the extra-ocular muscles upon the eyeball, which is so increased by strong convergence, and which is supposed to be the principal factor in the production of near-work myopia, is not effective so long as the working distance is maintained at 40 to 50 cm.

Again, a considerable number of individuals, in spite of good accommodation and visual acuity, with myopia even of middle grade, are unable to wear a constant correction without pain and discomfort. A few become accustomed gradually to the glasses. Others show, ophthalmoscopically, hyperemia of the papilla, as is seen in hypermetropia which is not corrected.

Schmidt-Rimpler agrees with Hirschberg that the wearing of full correction for near work, can, in a few cases, cause severe asthenopia and neuralgia. The author's rule is to prescribe for myopia of 2 D. or 2 to 4 D. the full correction to be worn constantly, provided the visual acuity and the range of accommodation are good. Such practice he finds satisfactory in a great number of myopic cases, if the myopia does not exceed 10 D., and if the age is not much over 20 years. The proper prescribing of glasses is not a simple mathematical problem, but a study of the individual.

Regarding the removal of the lens, Schmidt-Rimpler has in the last few years become more conservative, because he has seen a number of patients who, three to nine years after this operation, have had detachment of the retina, and have become blind. Von Hippel found 6 per cent. of cases of detachment of the retina in the patients operated upon by him in Halle. Schmidt-Rimpler, who is now in Halle, has subsequently found detachment to have occurred in other cases in von Hippel's series, bringing the percentage of blindness from this operation up to 9. This number exceeds the per-

centage of spontaneous detachment in high grade myopia. Herter, in the clinic at Jena, has also found 9 per cent. of retinal detachment following the Fukala operation. Axenfeld, in 50 cases which were at the start good, subsequently had four cases of detachment. Hirschberg no longer practices the Fukala operation, and Schmidt-Rimpler gives but one indication for it. If, in high grade myopia, by the use of glasses, vision is not sufficiently good to be of use, the lens may be extracted, provided the danger of the operation is clearly explained. With Schmidt-Rimpler there is no doubt that more highly myopic eyes become blind after the Fukala operation than without it.

A Case of Bridged Coloboma (Multiple Coloboma) of the Chorioid of the Right Eye and Micropthalmos of the Left.

Walter, O, Odessa. (Die Ophthalmologische Klinik, November 5th, 1904.) Author's patient was a Jewish woman, 19 years old. The left palpebral fissure was 3 mm. smaller than the right. Microphthalmos—the cornea was the size of a pea, and slightly hazy. The anterior chamber, iris and pupil were present. There was a coloboma of the iris below.

Ophthalmoscopically, a few of the fundus details could be made out. Directly in the center was a black spot the size of a papilla. Around this in all directions were a number of very thin vessels, which, however, could not be traced to this spot, but appeared to pass behind it. V.—hand movements in lower portion of field.

Right eye: Externally normal: $V.=^{20}/_{40}$. Ophthalmoscopically, the disk was normal. Below l. d. d. was a round white spot, with pigmented margins, about half the size of the disk, and apparently elevated. About l. d. d. below this spot, was a second, about the size of the disk. Still further below, l. d. d. from the second spot, was seen the convex margin of a large coloboma. The margins were pigmented, the pigment extending into the white area.

The lower limitation of the coloboma could not be seen. In all three colobomas no retinal vessels were seen; they passed around the margins.

S.

Contractile Stroma Cells of the Uvea.

Munch, Berlin Ophthalmological Society, (Die Ophthalmologische Klinik, Nov. 5, 1904.) Munch dissolved the pigment out of the iris with analin oil, making the iris transparent. He found a network of radial and circular cell processes. The radial processes were in the majority, and were

of greater calibre. Purely circular cells were seldom found. In the anterior layers of the iris the cells were smaller; in the posterior layers they became larger, and in part united with the sphincter. The ciliary insertion was in part, the circulus iridis major. These stroma cells represent the true dilator pupillae; the old dilator can only act upon, and fold, the posterior pigment layer.

The sphincter pupillae must first overcome the tonus of the dilator; second, straighten out the iris vessels. In doing the latter, it is helped by the blood pressure. The dilator must first overcome the sphincter; second, make the vessels tortuous; and third, compress the vessels and tissues, and thus overcome the blood and lymph pressure.

These changes could not be brought about by the old dilator. Ectropion of the pigment layer can be explained by this arrangement, by the tonus of the anterior layers of stroma cells, but the old dilator would only be in a position to drag the pigment layer back.

S.

A Tumor of Diagnostic Interest in the Temporal Region.

Hanke, (Wiener Klinische Wochenschrift, 1904, No. 8, Ref. from Die Ophthalmologische Klinik, November 5th, 1904.). Hanke demonstrated before the K. K. Gesellschaft der Aertze in Vienna a tumor in a girl 13 years old, which started eight years previously, after whooping cough. It was situated above and below the malar bone, beneath the skin; was uniformly soft, painful on pressure, and not compressible. The upper portion pushed into the outer side of the upper lid, and could not be actively raised.

The orbit and bulbus were free. The tumor was said to become smaller at irregular intervals. The diagnosis can only be lymphangioma or neuroma. Against the former is its incompresibility; and against the latter its occasional reduction in size.

Fuchs had removed an identical tumor a short time before, which proved to be a plexiform neuroma, and believed therefore that this tumor was probably the same.

S.

A Peculiar Injury to the Iris Due to a Dynamite Explosion.

OSTERROHT, (Die Ophthalmologische Klinik, September 15th, 1904.). Osterroht described before the Med. Gesellschaft in Giessen this case, in which the entire iris without change in form or color was dislocated into the vitreous. Both frontal sinuses were opened; the left eye was perforated and had blood in the anterior chamber. The lens was lost by the

traumatism. He thinks the ciliary body in relation to the iris was also dislocated backward. The eye was blind; the tensior, was reduced.

Bilateral Microphthaimos Coloboma of Iris and Choriold Below; Vitreous Formations. Gliosis of the Frontal Lobes of the Brain. Horse-Shoe Kidney and Atresia Ani.

Best, (Ophthalmologische Klinik, September 15th, 1904.). Best showed this case before the Med. Gesellschaft in Giessen, and called attention to the investigations of von Hippel, which established the fact that chorioidal coloboma is due to failure of union in the fetal cleft. The union of the margin of the secondary optic vesicle, which normally takes place, fails. Whether in this case the faulty tissue is connective tissue entering the cleft which von Hippel believes, or the retinal epithelium, which is faulty in its development (Elsching), the author does not say.

Unilateral Exophthalmos in a Case of Basedow's Disease.

Stern, Cassel, (Wochen. für Theropie und Hygiene des Auges, November 17th, 1904.). This case was that of a female 23 years old, belonging to a family of strong degen erative psychic tendencies. There was slight enlargement of the thyroid without distinct thrill. No objective changes in the heart as to size, and no valvular disease. There was palpitation, and pulsation in the carotids. The skin of the face was red. Elsewhere there were no abnormal changes, especially no pigmentation. The nervous symptoms were not pronounced; the patient was, however, excitable, cried easily and had a tremulous voice: no loss of flesh.

The eye symptoms were limited to the left eye. Stellwag's symptom, or widening of the palpebral fissure, was present. There was a distinct scleral line showing above and below the cornea. When both eyes were open von Graefe's sign could not be elicited, but when the right eye was closed, the left lid did not follow the eyeball in downward rotation. Left exophthalmos was rather pronounced. The right eye had a myopia of 8 D., and the left a myopia of 15 D., which made the author think that perhaps the exophthalmos was due to an elongated eyeball, but such marked exophthalmos he believes could not be so produced. Möbiüs's sign was present but not considered of much import, in view of the highly myopic eyes, in which convergence would naturally be faulty. Ophthalmoscopically, were muscular and pigment changes. Treatment was thyroid extract in tablet form and electricity.

The Tonic Contraction of Pupils, Inactive to Light Stimulus.

ROEMHELD, L., (Muench. Medizin. Wochensch, November 15th, 1904.). Certain pupils which do not reflexly respond to light stimulus, contract during the acts of convergence, or accommodation, or during the forcible voluntary action of the orbicularis palpebrarum muscle. They may contract rather rapidly, and remain in this condition for quite a time after the stimulus ceases, and then very slowly return to the original size. It is to these last phenomena that Roemheld calls attention.

Abnormal pupillary reaction can be theoretically as follows:

- 1. The reaction of the iris-muscle (contraction and dilation of the pupil) in proportion to the stimulus can be greater or less than normal. Only the latter is of practical significance.
- 2. The *rapidity* of reaction may be abnormally low or high. Sluggishly reacting pupils are especially noted here.
- 3. The third form of pupillary disturbance was first noticed by Piltz, in 1900. It consists in this, that pupils contracted from light, accommodation, convergence, or orbicularis action, remain so for an uncommonly long time, then dilate with unusual slowness.

Piltz first observed this pupillary phenomenon in paresis, and even in pupils with light reflex.

A distinction is thus made between pupils which are slow in contracting and dilating (Strasburger type) and pupils which, aside from this remain in full contraction for an unusually long time (Saenger form). There is, physiologically, considerable variation in the time and amplitude of pupillary reaction, and "abnormally slow" and "abnormal amplitude" are more or less relative terms. In children, the time reaction is less, and the amplitude greater than in later life. It must always be regarded as pathological if the pupils remain for an abnormally long time in the condition of greatest contraction.

Eleven cases exhibiting this pupillary phenomenon have been reported, to which Roemheld adds another.

His patient was a male 49 years old. The right pupil was 7 mm., the left $5\frac{1}{2}$ mm. in diameter. There was no direct or consensual reaction to light. Accommodation, tested each eye separately, brought both pupils quickly down to 2 mm. They remained at 2 mm. for 15 seconds, then slowly dilated, requiring three to seven minutes (two observations) to reach the original diameter. In convergence, full contraction was reached in four seconds. When the patient looked into distance, the pupils maintained their maximum contraction for

15 seconds, and recovered completely in seven minutes. Similar phenomena, but less marked, were observed when the pupils contracted from orbicularis action.

The patient had Basedow's disease; syphilis was positively excluded, and there was probably no spinal trouble. Rothman considers the Strasburger form as the weaker precursor of the Saenger form. He attributes both to a gradually developed atrophy and contraction of the paralyzed sphincter, due to a variety of acute and chronic processes injuring the sphincter nucleus or nerve fibres.

The diseases in which this pupil has been thus far observed are congenital syphilis with idiocy, multiple sclerosis, tabes dorsalis, diabetes, alcoholism, migrain, and especially paresis.

The Symptomatology of Sympathetic Paralysis.

Rosenfeld, Arthur, (Muench. Medizin. Wochensch. November 15th, 1904.). Physiological experimentation upon animals has shown that section of the cervical sympathetic produces upon the side of the lesion vasomotor paralysis, increased temperature and redness of the skin of the head, and paralysis of the dilator pupillae and Müller's muscle, causing contraction of the pupil and palpebral fissure. Stimulation causes opposite results. Besides these symptoms, lesion of the sympathetic frequently causes certain disturbances in secretion of the sweat and salivary glands.

Rosenfeld reports in full a case of sympathetic paralysis which autopsy showed to be due to a surrounding and destruction of the right sympathetic in the neighborhood of the inferior cervical ganglion, by a metastatically involved lymph-gland the size of a plum.

The right vagus was also included in the tumor mass. The left sympathetic was entirely free. Between esophagus and trachea were also metastatic glands. The left recurrent laryngeal nerve was imbedded in diseased glands. The primary tumor was a carcinoma of the esophagus.

The symptoms were: Emaciation and caxchexia; the *left* side of the face and ear, distinctly reddened, and warmer than the right; left pupil dilated, right contracted; both active to light and accommodation. Pain from pressure in the epigastric region, caused dilation of both pupils, the right very much so, so that it became as wide as the left. The right palpebral fissure was a little narrower than the left. Left recurrent laryngeal paralysis, esophogeal stricture, and enlargement of the liver. In the death agony there was profuse sweating of the entire body with exception of the right side of the face.

The right sympathetic was paralyzed by a tumor, and the right recurrent laryngeal, in spite of its proximity, escaped, a fact which has been noticed a great many times.

Of special interest in this case are the hyperemia of the opposite side of the face, anidrosis, and retained pupillary reaction to pain upon the side of the lesion.

Experimentation upon animals has shown that immediately after section of the sympathetic, there is hyperemia of the same side, followed in time by a normal condition of the vessels, and finally by anemia of the same side. In man, hyperemia of the sound side following section of the sympathetic has never been observed.

For diagnostic purposes Heiligenthal regards as the affected side the one showing the most faulty reaction-capacity of the blood-vessels of the skin.

Anidrosis in man is always a sign of complete sympathetic obstruction. Hyperidrosis is observed from compression, but never from traumatic injury of the sympathetic.

Explanations for the pupillary phenomenon are mostly contradictory, and as yet are unsatisfactory.

Rosenfeld concludes that in spite of the reaction of both pupils to pain, the paralysis of the left recurrent laryngeal nerve, and the hyperemia of the left side of the head, the diagnosis of the right sympathetic paralysis could have been made in this case with absolute certainty, if the right sided anidrosis had been established by artificial sweating before death.

Paralysis of the sympathetic is much more frequent than stimulation. The condition of the blood-vessels is the least constant of the symptoms, and of least value in diagnosis.

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Detachment of the Posterior Layers of the Retinal Pigment Layer of the Iris Near Its Ciliary Origin and Its Protrusion Into the Anterior Chamber Through the Pupil.

PRAUN, E. (Centralbl. fuer Prakt. Augenheilk., Oct., 1904). reports a case under this head. A woman while chopping wood was struck in the eye by a splinter. In the anterior chamber of the left eye, a small brown mass was to be seen, which when magnified was seen to be the detached everted posterior layer of the iris pigment. Drawings are given showing the condition.

C. L.

The Anatomic Representations of the Eye by Arabian Physicians.

HIRSCHBERG, J. (Centralbl. fuer Prakt. Augenheilk. Oct., 1904), says that the Grecians possessed no drawings of the

eye. The Arabians, on the other hand, had several text-books illustrated in this way. He translated from the work of Halifa, of Syria. There are several differences from the structure of the eye, as we know it to-day, but the drawing, on the whole, shows a good knowledge of the anatomy of the eye.

C. L.

Cataract Aspiration, a Radical Operation of the Arabians.

HIRSCHBERG, J. (Centralblatt fuer Prakt. Augenheilk., Aug., 1904), says that he Greeks never practiced this method. It originated in Persia and Mesopotamia. There are two methods, an older section of the cornea and introduction of a glass tube; and a more recent section in the sclera, and introduction of a thin, grooved metallic cataract needle. He describes the method of discovery and employment of the latter, and regards it as the second step in the progress towards the method employed to-day. It is not known who discovered the first method, but the second was discovered by Amman about 1020 A. D. He thinks there are cases where it could be used advantageously even to-day.

Edema of the Cornea in the New Born After Forceps Delivery.

FEJER, J. (Centralbl. fuer Prakt. Augenheilk., Aug. 1904), reviews the literature on injuries to the eyes during delivery, and reports a case of injury to the cornea. The picture was as follows: The vicinity of the left eye was swollen, and the epidermis was detached in several places. There were several hemorrhages, but little secretion. The cornea was of a milky color throughout, though it had not lost its luster. Traces of a trauma could be made out only at the external limbus, where the epithelium appeared a little pricked. The outcome was complete clearing up of the cornea. A blade of the forceps had probably rested on the eye and produced a pressure of on the cornea, resulting in edema of the corneal lamellae.

C. L.

Studies on the Resorption of Detached Iris Tissue by the Eyeball.

FEJER, J. (Centralbl. fuer Prakt. Augenheilk., Oct., 1904), describes a case where he was able to observe the resorption of the entire iris which had been detached by a blunt object. The swollen part of the lens was covered with a reddish brown body, which, when examined by a magnifying glass, showed iris tissue. Part of this was seen to disappear while under observation, by absorption, while the rest was expelled through the corneal wound.

ABSTRACTS FROM SPANISH LATIN-AMERICAN OPHTHALMIC LITERATURE.

BY

FRANK RING, M. D.

SAINT LOUIS,

AND

M. URIBE-TRONCOSO, M. D.,

CITY OF MEXICO,

Assisted by Jose de Gonzales, M. D.,

LEON, MEXICO.

Ocular Hemorrhage After Operation for Cataract.

Dr. Juan Santos Fernandez. This original article is published in August number Anales de Oftalmologia, Mexico.

The following conclusions represent the summary by the author:

- 1. That intraocular hemorrhage after iridectomy or cataract extraction is the most grave accident which may occur to the ophthalmic surgeon.
- 2. That, thanks to the numerous observations published, the etiology has been cleared up in a notable manner, although some points remain obscure.
- 3. That the proceeding to be employed when the other eye requires operation is a problem of great responsibility for the operator, and of grave risk for the patient.
- 4. That in the actual state of our knowledge, Dr. Valude proposing the operation of reclination of the cataract, which is a counsel worthy of consideration, which we accept, in spite of not having put it in practice, because we do not wish to attempt an operation such as reclination without previously attaining the appropriate dexterity.

 F. R.

Bloody Infiltration of the Cornea.

(Mexican Ophthalmological Society). Dr. Uribe-Troncoso presented a patient of fifty years of age, who had received, in May, 1903, a blow in the left eye, inflicted by a small stick containing some iron nails, the same having been thrown during a quarrel. The blow produced a wound at the level of the orbital arch; the following day all the region was swollen and the lids, which were very edematous, could not be opened. At the end of eight days the swelling and ecchymosis of the neighboring parts was much reduced, and then it was apparent, for the first time, that nothing could be seen with the wounded eye.

Upon examination, two months after the injury, the bulbar conjunctiva was notably injected; no trace of wound to the globe. The brilliancy and smoothness of the cornea was normal, but of the brownish red color of blood, in all its extent; the infiltration was fainter in its upper half, it being noticeable that the more intense chocolate color of the inferior part was due to the presence of an abundant hyperemia, which occupied the half of the anterior chamber. It was not possible to perceive the iris at all. The patient complained of some periorbital pain. Some drops of a 5 per cent. solution of dionin were instilled, and atropin and hot compresses were prescribed.

The absorption of the hyperemia showed some change until the end of August; the vascularity of the cornea showed itself in its upper part, and this condition persisted for almost three months after. The author is inclined to believe, with Wernicke, that primarily hyperemia is produced, which ruptures the membrane of Descemet and allows the blood to infiltrate into the proper tissues of the cornea.

F. R.

Surgical Intervention in Alterations of the Ocular Motor Apparatus.

DR. E. LANDOLT, Paris. (Archivos de Ofthalmologia-Hispano-Americanos, September, 1904). From an original article we extract the following observations:

"If we consider now the motor alterations which we have to treat surgically, we must put in the first line the muscular paralysis. In a paralyzed muscle hopeless of cure either by medicine or time, surgical intervention is perfectly justifiable.

The advancement, combined with a moderate resection of the paralyzed muscle, has given us a true restitutio ad integrum in paralyses with diplopia greater than 20°. The excursion of the eye of the side operated upon thus attains normal projection, without prejudice to the same functions of the opposite side.

Binocular vision is reëstablished not only in the forward view, but in all directions, and especially in convergence.

We can then say with reason that while tenotomy is equivalent to the paralysis of a muscle, that advancement has a contrary effect to the paralysis, and that this is the operation which we must choose in these cases." * * "The only logical operation for divergent strabismus is the advancement of both internal recti." * * *

"In insufficiency of convergence tenotomy of one or both external recti is not admissable even when there is a great excess of divergence, an excess greater than a metric angle."

"The advancement of the capsule with folding of the muscle is indicated most in insufficiency and light grades of strabismus."

"The post-operative treatment has a very important bearing, which is not yet fully appreciated. In no case is it permissible to abandon the patient even after a simple tenotomy, with only a bandage applied over the eye (and above all, without any bandage, as I have seen done.)"

"In every operation of advancement, the most complete immobility is necessary to obtain the insertion of the muscle in the desired position. If the non-operated eye is left uncovered, the operated eye will follow the movements of the other, even under the bandage, and the effect of the operation will be notably compromised by this means.

"After the operation, even when it has been done upon only one eye, it is necessary to use a binocular bandage; besides this the patient must be kept quiet (repose in bed, few visits) until cicatrization is complete, which is obtained in about five days. From this time the exercises of convergence may be commended in cases of divergent strabismus.

In cases operated for convergent strabismus, it is suitable to leave them one or two days with the bandage. It will withdraw the temptation to converge, continuing the use of atropin and lenses, which will prevent the necessity for accommodation for near and distant vision; that is, while the tendency to convergence persists. It is evident that the exercises for the establishment of binocular vision should be practiced at the same time."

The Accommodating Descent of the Crystalline Lens, According to the Different Theories of Accommodation.

DR. M. URIBE-TRONCOSO, Mexico, assisted by DR. Jose DE

GONZALEZ, Leon. Mexico. (Anales de Oftalmologia, Mexico). "The accommodating descent of the crystalline lens, according to the different theories of accommodation." (Mexican Ophthalmologic Society, May, 1904), Dr. M. Uribe-Troncoso contributes a communication apropos of the new works written about the mechanism of accommodation. The theory of Helmholtz is founded on the elasticity of the crystalline lens, which during the relaxing of the ciliary zonula takes the spherical form to verify the accommodation. Some objections had been urged against this theory without overthrowing it, until Tscherning, by means of demonstrations, became convinced that the crystalline, instead of becoming spherical in the forward direction, transformed itself during accommodation into an anterior lenticonus, and signalized the dislodgment of the crystalline by means of various experiments, among others by observing through the medium of a very small opening placed in a diaphragm located in a focal point anterior to the eve. the entobic image of the crystalline, which falls always in the sense of weight, and is much more notable if a drop of eserin is instilled into the eve.

Dr. Uribe-Troncoso published in the March, 1900, number of Annales d' Oculistique de Paris an article in which he suggested the idea that the accomposative descent of the crystalline is due, not to the fall of this organ totally, but to the fall of the bland substance within the capsule, which substance is designated as gummous or bland by Dr. Carmona and other anatomists. Tscherning has adopted this idea without citing its source, and now attributes a greater importance to the descent of the mass of the crystalline, towards the posterior crystalloid, rather than forward of the nucleus, having notably changed opinion regarding the geometrical figure of the accommodated crystalline. In a work recently published in the British Medical Journal, Dr. Grossmann gives the result of his observations in a patient afflicted with congenital absence of the iris, with polar cataract, anterior and posterior, and without photophobia, but having a strong hypermetropia and a slight astigmatism. He has been able to prove that the crystalline augments in thickness, forming an anterior lenticonus and projecting also in the posterior pole, and that the equatorial diameters diminish during accommodation. He reports having directly seen the crystalline dislodge itself downwards during accommodation, and that when eserin is instilled, the lens appears to be dilated upwards, which would support the opinion of Hess, who persists in believing that the dislodgement of the mass itself within the capsule cannot be effected.

Uribe-Troncoso believes that Hess cannot explain, according to the theory of Helmholtz, why the crystalline projects only in the anterior pole, flattering in the periphery, as Grossmann has, also, just proven. And that Tscherning cannot either explain the descent, in totality, of the crystalline by his theory solely, although, according to him, the zonula must be stretched in all its parts, and he has had to recur to the explanation given by Uribe-Troncoso upon the descent of the bland mass of the crystalline within the capsule, according to the laws of gravity, which would produce a deformity of the organ downwards.

The observations of Grossmann are not yet concluded, and actually require proceedings of investigations of the most precise nature, and favorable results are hoped for. F. R.

ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

BY

V. L. RAIA. M. D.,

PROVIDENCE, R. I.

Artificial Abortion for a Serious Affection of the Eye During Pregnancy.

Delzoppo and Soli. (Annali d' Ottalmologia, Fasc. 1-2, 1904). Numerous observations have proved beyond any doubt that there is a certain relation between the eves and the female genital organs, the alterations of these many a time being responsible for the appearance of ocular Disturbances of the menstruction have produced diseases. diminution of the visual field, chorioiditis, keratitis, hemorrhage in the vitreous, and periodical detachment of the retina: pregnacy amblyopia, amaurosis, optic meuritis and glaucoma, while a pathological puerperal state has been the cause of metastatic inflammation and suppuration of the eveball (panophthalmitis). The authors report a case of ocular affection during pregnancy which was becoming worse every day, and was greatly improved with the interruption of pregnancy.

The patient, 38 years of age, had had four previous pregnanices. Toward the third month of the fourth one she noticed all at once a deficiency in the upper part of the visual field of O. D., and two days afterward became totally blind in it. Diagnosis of extensive detachment of the retina was made. Soom after the patient had become pregnant for the fifth time she began to notice with terror a diminution of the sight in the left eye. The examination revealed a progressive atrophic chorioiditis, and after having exhausted all the ordinary means of treatment, the retina becoming somewhat opaque and fearing the same results as in the other eye, the patient was referred to the Maternity Hospital. Here artificial abortion was performed, after which the eye conditions steadily improved, the retina became entirely transparent, the chorioiditis was arrested, some of the recent exudates disappeared and vision from 20-200 finally got to be 20-70 with the correction of ten D. of myopia.

The authors attribute the eye affection in the present case

to the enlarged general circulation in pregnancy from the placenta, to the increased tension of the blood, and the hydremia, for which transudation through the blood-vessels is rendered easy, and finally to alterations already existing in the chorioidal vessels and eye membranes due to the high degree of myopia.

Some Bacteriological Researches on the Conjunctiva After Cataract Operation.

(Annali d'Ottalmologia, Fasc, 3-4, 1904). Bossalino. Many are the microorganisms which are found on the normal conjunctiva, but what action they have is not yet known. The object of the author's investigations is to find out to what extent a normal conjunctiva can be rendered aseptic, and the importance we may ascribe to the microorganisms which resist the ordinary disinfection, preceding and following operative acts in ocular surgery. This important question has been studied previously by others, and all seem to agree that with the usual means at our disposal only a diminution of germs or a retardment in their multiplication is possible. The experiments were made on eighteen patients operated for cataract. The author took cultures in all these cases the first and second day after the operation, isolating fourteen times the staphylococcus pyogenes albus, four times the staphylococcus pyogenes aureus, twice the staphylococcus citreus. twice the staphylococcus cereus and once the sarcina lutea, and of each he inoculated a part on the cornea of rabbits—always with negative results. From these experiments Bossalino concludes that, although the isolated germs possess all the morphological and biological characters of the common staphylococci, inoculated on the cornea, injected under the skin and in the peritoneal cavity of different animals, they lose the power of pus formation. He, however, did not stop here, but went further to find out if these germs completely lose their virulence, or if they can, under certain conditions, be invigorated and rendered again active. With this object in view he made cultures from a patient in whom extirpation of the sac for dacryocystitis had preceded cataract extraction and the secretion had completely disappeared. These cultures produced numerous colonies of staphylococcus pyogenes aureus, and very few of the staphylococcus pyogenes albus. Pure cultures were then made and with all due precautions dissolved in a solution of chlorid of sodium and a small quantity was injected in different parts of rabbits and on the cornea with negative results. Another culture not diluted in chlorid

of sodium solution was then injected under the skin and in the peritoneal cavity, and this time a swelling appeared on the abdomen from which a sero-fibrinous exudate was extracted. This liquid was used to make new cultures which developed numerous colonies of staphylococcus pyogenes aureus, of which four cubic centigrams with a special syringe were injected under the skin, in the peritoneal cavity and a few drops were inoculated on the cornea of guinea pigs. The animals died in four hours from septicemia and peritonitis. and on the cornea of the other an abscess appeared which rapidly spread, producing the loss of the organ through panophthamitis. These experiments show that the staphylococcus pyogenes aureus, isolated by the author, although innocuous in the conjunctiva after the antiseptic precautions taken in cataract extraction, under favorable conditions is apt to regain virulence and become a factor of great danger in eve surgery. Bossalino does not agree with Axenfeld, who thinks that the eve resists microbic infection more than other parts of the body, and that the only pathogenic germ excepted is the diplococcus of Fränkel. He has proved that if the eve resists them it is because they have lost their virulence and not because the eve tissues are more resisting than others. Valude gives great importance to the tears, which he considers of great germicidal power. In conclusion the author says:

- 1. It is impossible to render the conjunctiva aseptic.
- 2. The eye has not more power of resistance to infection than other organs.
- 3. The tears and the antiseptics used before and during the operation decrease the number of germs and lessen their virulence.
- 4. Under favorable conditions these germs are apt to become active and virulent, producing disastrous results in ocular surgery.

Filamentous Keratitis.

BARDELLI. (Annali d' Ottalmogia, Fasc. 3-4, 1904). The author reports a case of that rare affection of the cornea first described by Leber and called keratitis filamentosa. While he was treating a patient with burns of both eyes by lime-dust, the left eye, the less affected, developed characteristic filaments attached by one extremity to the membrane and movable with the movements of the eyes. It was accompanied by intense photophobia, pain, pericorneal injection, lacrimation, blepharospasm and miosis. The eye after several relapses finally got well, the cornea regained its transparency, only a nebula be-

ing visible with lateral illumination. While Nuel divides the disease into idiophatic and secondary types, the one arising on a healthy the other on a previously affected cornea (phlyctenular and interstitial keratitis, injuries and ulcers of the cornea, etc., Bardelli is inclined to believe that the affection is always secondary. Leber considered these filaments the product of coagulation. Uhthoff made them the continuation of Bowman's membrane, and Czermak thought they were made of mucus twisted around by the movements of the eve. Nuel and Hess gave the best explanation, considering them epithelial products. The filaments are classified as typical or fibrillar and atypical or cellular. The former have a central ribbon twisted around itself and a sheath, and two extremities. a free and an adherent one to the cornea (cone of implantation. The author has examined several of them microscopically and his fine illustrations show very plainly their structure and confirm the essential part the corneal epithelium takes in their development. He admits with Nuel that the elements of the central ribbon are transformed more and more in keratin and that the cells of the sheath undergo mucous degeneration. The central portion is of epithelial formation like the finger nails and can be compared to a cornu cutaneum implanted on the cornea. While the spiral conformation is explained by Sourdille as the product of the unequal development of its cells and the different resistance encountered, the author is of the opinion that the movements of the eve only are responsible for its production.

Traumatic Cataract from Rupture of the Posterior Crystalloid.

CHIARI. (Annali d' Ottamologia, Fasc. 3-4, 1904). The author reports a case of rupture of the posterior capsule in a boy 14 years of age, who was struck on his right eye with some rubbish. The eve became slightly inflamed, the sight was not affected, and in a few days the patient returned to his occupation entirely well. Two months after the accident the vision began to decline and progressively got worse, so that at the end of a month he could scarcely count fingers at one The examination revealed below and behind the lens a floating white substance in the vitreous, for which a diagnosis of rupture of the posterior capsule was made. Within another month quite all the lens substance had been absorbed and vision had improved to 1-6 with + 13 D. It still increased and finally reached 2-3 with the same correction. Lateral illumination then showed that the anterior capsule was intact and an irregular opening was present in the posterior crystalloid, from which the soft substance of the lens had escaped into the vitreous. The affection is a rare one, if we judge from the few cases which have been reported. The mechanism of production, according to the author, is as follows: The traumatic action on the cornea depresses this membrane and consequently decreases the antero-posterior diameter of the bulb and increases proportionately the transversal one. Under this action, if the zonula does not give way, the increased tension will be resented by the crystalloid, yielding either on its anterior or posterior surface. He explains the little disturbance after the injury and the rapidly failing vision at the end of two months by supposing that the rent in the capsule immediately after the accident healed up, and then burst open with the rapid formation of opacities in the lens substance.

Ulcer of the Cornea from Streptothrix.

DE BERARDINIS. (Annali d' Ottalmologia, Fasc. 5, 1904). In studying bacteriologically the genesis of corneal ulcers, very often the author has noticed forms of cocci either isolated or in chains, to which he at first gave very little importance. One day he had the opportunity to look with the microscope at the special strepthotrix isolated by Prof. De Giaxa from the secretion of a pulmonary abscess in the Institute of Hygiene of the University of Naples, and was greatly surprised by the likeness of this germ to the forms so many times observed in his researches. On rabbits then he reproduced the typical corneal ulcer so frequently met in our clinics by inoculating the pure culture of the microorganism in bouillon or the secretion collected from the experimental ulcers on the cornea of other animals. The author has observed that the ulcerative keratitis which follows, although accompanied by intense reaction, never destroys the eye by suppuration of the internal membranes, and the leucoma, more or less extensive at the beginning, has a tendency to become very small; exactly what happens in ulcers of the cornea with hypopion in man. The constant integrity of the Descemet membrane and the different alterations of the iris found microscopically by the author, confirm him in the opinion that the hypopion has not its origin from the cornea, but from the iris. Berardinis thinks that probably many of the corneal ulcers ascribed to the staphylococcus pyogenes aureus, strepotococcus pyogenes and diplococcus are due exclusively to this microorganism.

Morphology of the Fetal Lacrimal Apparatus.

Monesi. (Annali d' Ottalmologia, Fasc. 3-4, 1904). At the bottom of the lacrimo-nasal groove in the embryo an

epithelial growth takes place, forming a cord, the future lacrimo-nasal canal, from the upper part of which, later on, the primitive canaliculi originate. The lumen is the product of a cellular necrosis in its center, and, according to some writers, begins at the nasal extremity; according to others from the upper part, or canaliculi. These unite in a common duct, which opens in the upper part of the nasal canal bent at right angles. The central cavity before the third month presents no remarkable dilatation, the lacrimal sac appearing at the fourth month. While the researches of the previous observers reach only the fifth month. Monesi has followed the development of the lacrimal apparatus from 2½ months up to its full growth. At 2½ months he has found the epithelial cord representing the nasal canal and the two canaliculi with a cavity in the center already visible. After the third month the common tract of the canaliculi, which is in continuation of the upper part of the nasal canal, becomes enlarged, forming a cavity which will be a part of the sac. If this tract remains narrow throughout intrauterin life the canaliculi will communicate in the adult by a common duct into the sac, while if it dilates, as he has observed toward the fifth or sixth month. becoming a part of the sac, there will be a separate entrance in the same. He explains the disparity of opinions in regard to the way of communication of the canaliculi with the sac after birth by the different evolution of this part of the lacrimal apparatus.

At the fourth and fifth month the author has seen the sac well developed and he considers it as the dilation of the superior and curved portion of the naso-lacrimal canal. months the naso-lacrimal canal is represented by an epithelial cord directed from above downward, slightly curved toward the inner side. Its lumen is larger either at the upper or at the lower extremity, and the intermediate portion is the narrowest. At the fifth or sixth month he has observed several times the duplicity of this canal, one branch terminating in a cul-de-sac, the other in the nasal cavity. The inferior extremity of the nasal duct at the sixth month is seen enlarged and the internal wall distended and bulging, while at the end of foetal life, through a process of atrophy, an opening becomes manifest. This distension is due to the accumulation and gravity of the gelatinous mass in the lacrimal apparatus. If the tissue between the epithelium of the lacrimal duct and the nasal cavity is thick, this opening is retarded and at birth no communcation may be found in the nose. This fact explains the cases of congenital dacryocystitis.

REPORT OF THE TENTH INTERNATIONAL OPHTHALMOLOGIC CONGRESS.*

LUCERNE, SEPT. 13 to 17, 1904.

· WEDNESDAY, SEPT. 14.

I. DISCUSSIONS.

CHAIRMAN, KUHNT, OF KÖNIGSBERG.

1. Establishing the Value of an Eye Injured or Lost by Accident.

In order that the discussion may not be extended infinitely and into irrelevant matters, Kuhnt announced the following points governing the deliberations:

- 1. The establishing of the upper and lower limit of the visual acuity required for earning capacity.
- 2. Propositions for the placing of fixed values on percentage estimations.
 - 3. Real and eventual results of injuries.
 - 4. Blindness of one eye, and monocular vision.
 - 5. Monocular weakness of vision.
 - 6 Binocular weakness of vision.

Establishing the Upper and Lower Limit of Visual Acuity Required for Earning Capacity.

EMMERT proposed that the principal questions be first dealt with, in view of which he suggests the following:

- 1. Is it expedient that we at all enter upon the question of an upper and lower limit of visual acuity required for an earning ability.
 - 2. The joint estimation with industrial experts.
- 3. The eventual rejection of any percent-rate method of appraisal.
 - 4. The eventual establishing of fixed percent-relations.

PFALZ suggested that the upper limit of the visual acuity required for ability to earn be 2-3 of the normal vision.

HUMMELSHEIM was of the opinion that the establishment of

^{*}From Die Ophthalmologische Klinik, Oct. 15, 1904. Translated from the German by Dr. T. T. Blaise, of Mason City, Iowa.

a fixed boundary should for the present be postponed, in order that investigations on a larger scale might be made with a view of ascertaining the degree of vision with which a laborer can still fully discharge the duties in a certain vocation, and also the lowest degree of vision necessary for the same. He believes that with extensive statistical resources positive bases could be procured.

2. Propositions with a View of placing Fixed Values on Per Cent. Ratings or Estimations.

SCHMIDT-RIMPLER: Between certain percent. rates one should have the choice of the individual estimations. He adheres to the Axenfeld idea as regards the percent. basis.

Axenfeld attacked Würdemann's claim that with the Magnus formula we may obtain a definite, mathematical conclusion as to the extent of the reduced earning capacity. He can only understand this claim from the point of view that Würdemann only took into consideration the literature up to 1897, and further defended Zehender against the attacks of Würdemann.

EMMERT called attention to the difference of opinion between the criminal and industrial view-points as to the loss of an eye.

PFALZ proposed to consider workmen as unqualified who have lost 25 per cent. of one eye (vision) and as qualified those who have lost 33 1-3 per cent.

WICHERKIEWICZ agreed with Axenfeld, and opposed the idea of withdrawing the indemnity upon the restoration of depth-perception (perspective), since the loss of an eye indicates an abatement in reserve force.

Constantin considered all methods used up to the present date in obtaining the earning capacity after eve injuries, as He believes, however, that the matter can be achieved in a new way free from these objections. One should measure the time required to execute a given portion of labor with the injured eye, and by comparing this time required with the time it requires to do the same labor with the normal eye, and base the estimation on this: If, e. g., it requires three times the duration that it requires with the normal eve, it would indicate that the loss of earning capacity would equal 2-3, since the visual organ possesses only 1-3 of its original worth. The examinations should be experimentally made by oculists on themselves, reducing the power of vision artificially to the point under consideration. By a great number of observers it follows that elements of error are eliminated in consequence of individual variations. where in the preliminary observations the mobility, the visual

field, etc., have been neglected, only a few typical cases should be examined as to the visual acuity of the central field, thus:

- 1. Exclusion of one eve.
- 2. Reduction of the visual acuity of one or both eyes (from 1-10 to 9-10:).

The labors to be rendered should necessarily make manifold demands upon the vision.

McHardy was of the opinion that the loss of the power of vision of one eye should at least receive indemnity to the extent of 50 per cent, of the wages earned at the time of the injury. Besides the common conspicuous considerations (a person with one eve is more predisposed to injury to the remaining eve on account of the reduced field of vision, though such injury is more disastrous to him than to the person with two eyes), he cited particularly one instance which in Germany does not apply. In England the employer is liable for losses by accident. So in the case of the loss of the eve of one-eved person, this employer would be liable for an indemnity of from 70 per cent, to 80 per cent,, and in case of a twoeyed laborer, from 20 to 30 per cent. In consequence of this the one-eved person either finds no emplyment, or receives much reduced remuneration, the employer seeking in this manner to forestall against a possible loss by injury.

3. Real and Eventual Results of Injury.

PFALZ contended that a distinction be made between real and eventual results in injury, i. e., when one eye has sustained a moderate reduction through injury, but the other retaining full, undisturbed function, that there be no indemnity granted, but that in the first estimate immediate provision be made, that upon any later injury of the remaining eye. regardless of cause, the results of the injury of the first eye shall at once become valid, and accordingly remunerated.

Axenfeld: When in case of injury by accident to the one eye, the other sustains disturbed vision later on by some disease, it becomes then necessary that the first injury be re-rated and correspondingly higher. Insurance in the domain of ophthalmology must assume an exceptional position. Axenfeld formulated his points into a motion.

WINTERSTEINER opposed the Axenfeld proposition on account of confusing accident insurance with invalid insurance and holds that a patient, who after injury of the one eye, sustains later the loss of the other through disease independent of the former injury thus becoming incapacitated, becomes a

charge of the invalid insurance and not of the accident insurance.

RECKEN spoke in opposition to the Axenfeld motion; he considered it illogical and unjust, illustrating by an instance in which a patient who lost one eye by injury, and the second eye through detachment, would according to Axenfeld's proposition receive full indemnity; while another, who losing his sight by double, spontaneous retinal detachment would receive nothing. He is of the opinion that jurists would dissent from Axenfeld's proposition.

ANGELUCCI: For the appraisal of the reduced earning capacity after eye injury, oculists alone are the competent judges, not the jurists: oculists are best qualified to comprehend the results of an injury upon the future power of vision.

Menacho contended that it is unqualifiedly necessary that, prior to the settlement of the question, investigations be instituted inquiring into the vision-power of laborers, thus obtaining a tangible basis for our future estimates.

Deschamps opposed Axenfeld's motion. He emphasized especially a difficulty, which, however, again does not apply to Germany. In France also the employer pays the indemnity. Accordingly, in case when an eye is lost under one employer, and later the loss of the other eye occurs by accident at labor under another employer, it would follow that on account of this second loss the former employer would now become liable for 1-3 of the indemnity and the last employer for the remaining 2-3. This would lead to most cumbersome and complicated conditions; even not infrequently would it be impossible to find the former employer.

PFALZ: We can here only discuss the matter from the standpoint of the doctor; what the jurists may do with it, we cannot influence.

SACHS believed that the adoption of the Axenfeld idea might give rise to suggestions of evil tendency. He favors an immediate and definite indemnity for the injury.

HUMMELSHEIM doubted the advisability of adopting the Axenfeld motion on equitable grounds. He favored the adoption temporarily of a stable indemnity.

LAQUEUR also considered the Axenfeld plan as questionable. Fuchs believed the Axenfeld motion does not properly belong to the deliberations of the International Congress, since legislation in the separate countries differs, the substance of which he formulated into a motion.

The motion of Fuchs carried, thus defeating the Axenfeld motion.

4. Blindness of One Side and Monopsia.

No discussion.

5. Monocular Weakness of Vision.

No discussion.

6. Binocular Weakness of Vision.

SCHMIDT-RIMPLER: Ascertaining the vision for distance does not determine the measure for near vision, this being especially the fact in cases of corneal and cataractous opacities.

HUMMELSHEIM reported an error in his commission report of the Rhein-Westfalien Oculists' Association, he having reported there the proof test of binocular vision to consist of the reduction of 1-5 of the vision of one eye, not 1-2. He again plead for statistical investigation.

JAVAL cited the fact that a great many of the existing difficulties, granting the agreement between the ophthalmologists and the jurists, can be overcome, by entirely relegating the conception of visual acuity proposed in all these deliberations, but instead depend upon the size of an object seen at a given distance. It should not be stated that an eye possesses this or that acuity, but it can discern these or those test objects at a common established distance.

SCHMEICHLER: In case of binocular blindness due to injury, not only full indemnity, but full wages should be allowed.

RECKEN pointed out some legal obstructions; thus, industrial laborers receive as indemnity the actual wage, while farm laborers receive only the running day-wage, putting the latter to a great disadvantage.

In his closing remarks, Kuhnt introduced a motion, asking that the necessary data and material be procured by investigation, inquiry and compilation (Sammelforschung), for which purpose a commission be appointed. The data shall be at the disposal of the committee of organization of the next Congress, which committee shall decide whether accidents shall again be discussed at the next International Congress of Ophthalmologists.

The motion to terminate the deliberations on eye injuries by submitting the same to a committee of the congress reads as follows:

The question shall be submitted to a commission consisting of one or two members chosen from each country, who, exclusive of the present existing committee consisting of Sulzer, Axenfeld and Würdemann, shall prepare the data and material and turn over their results to the committee of the XIth International Congress. Based upon these data, the next Congress shall then endeavor to achieve a final solution of the pending question.

The following gentlemen are appointed:

For Hungary,-Von Grosz. For Germany.—Kuhnt. America.—DeSchweinitz. Norway.—Schiötz. England,-Berry. Russia.—Ewetzki Austria.—Fuchs. -Krukow Belgium,—Coppez, Jr. Sweden-Gulstrand. Denmark.—Bierrum. Switzerland.—Haab. Spain.—Menacho. Italy.—Gallenga. France.—DeLapersonne. ---Angelucci

The motion is submitted to vote and prevails.

WEDNESDAY, SEPT. 14. P. M.

DEMONSTRATIONS.

FUCHS, OF VIENNA, CHAIRMAN.

(The numerals preceding the different topics refer to the numbers of the business program. See *Ophth. Klinik*, Nos. 17 and 18, pp. 260. The omitted numbers indicate absence of discussion.)

1-Wehrli: Demonstration of Brain Preparations with lecture (frontal sections):—

On the microscopic investigation of a case of soul blindness and cortical (soul) blindness.

Bernheimer hailed the demonstration of Wehrli with pleasure, since to his knowledge these are the first pathologicanatomic preparations that show that the macula has no insular (island-center) representation in the cortex.

3—Straub: Monocular Stereoscopy.

By his investigations of the parallax in ophthalmoscopy Straub discovered to his surprise that there can be monocular stereoscopic vision. From this he developed his stereoscopic pictures (im Zootrop), which he demonstrated.

SCHMIDT-RIMPLER doubted that this was true stereoscopic vision.

REYMOND (Turin): Magnani (Turin) showed a few years ago that one can see stereoscopically with one eye when a double prism is used which is so constructed that it will throw the temporal image of the object on the nasal portion of the retina and vice versa.

4—Best: Demonstration of Microscopic Preparations Accompanying his Lectures: Microscopic Reaction of Iron.

The microscopic preparations of Best demonstrate that the iron reaction so often appearing in intraocular calcifications and ossifications. The lecturer has further treated microscopic reactions with iron salts, and after washing, showed the retained iron by applying potasso-ferrocvanic (hydrochloric) acid ("Ferrocyankali-Salzsaeure"). In this manner an iron coloring is obtained corresponding entirely to the natural iron contents of the tissues. Above all is apparent the blue staining of the blood corpuscles and muscles, as well as the chromatin stroma of many nuclei and nucleoli. By this method are brought out also the axis cylinders of the nerves and the "Neurokeratin" stroma and the interstitial infundibuli (Zwischentrichter) of the medullary sheaths (Markscheiden). Of the nerves of the eye, the ciliary nerves have regularly arranged "Zwischenscheiben" or "Trichter." but the optic nerve has not. The medullary sheath of the optic-nerve fibres has a delicate neurokeratin stroma (reticulum).

5—HARMS: A Demonstration of Microscopic Specimens with his lectures: Contribution on Retinitis Hemorrhagica following Disease of the Arteria Centralis Retinae and its Branches.

6—(b) Senile Affection of the Macula. Demonstration of Microscopic Preparations. (First observation).

1. To Illustrate Lecture.

- (a) Closure of both central vessels; the artery through an intima-proliferation (internal tunic) of high degree and the remainder of the lumen by thrombosis; the vein by an organized thrombus.
- (b) Closure of the vein by organized thrombosis and a high degree contraction of the artery "intima"-proliferation partially severed from the wall of the vessel.

- (c) Closure of the artery by a sparsely organized thrombosis of the vein through endo emeso-and periphlebitis.
 - 2. Senile Macula Affection (Anatomic Observation).

The preparations show that a true, senile macula affection of the retina does occur (Haab), consisting of marked atrophy of the neuroepithelial layer (rods, cones and external bodies) of the retina. (Konf. Klin. Mon. Blt. für Aerste, 1904, pp. 418).

- Connective Tissue Growth in the Retina Originating from Old Hemorrhages, Richly Studded with Cholesterin Crystals in the New Tissues.
- 7. Hummelsheim:—A Sterilizable, Hermetically Sealed Collyria Dropper-bottle.

The dropper-bottle is taken after the Strohschein model. Although it is narrower, permitting easier cleansing with the accompanying small brush, it is less fragible, being made of stronger glass and very cautiously cooled by contraction of the bottom, the same resting in a stand and held in position by a spring clamp. There is a wire screen placed over the boiling stand. To assure sterilization of the exterior of the dropper, it has fastened to the upper bulge a horizontal bar on which the dropper may be everted after it has become sterile on the inside. The bar is thereby slid into a second spring-clamp which suspends it over the neck of the bottle. When sterilization is completed a button on top is pressed which allows the pipette to drop into the neck of the bottle. fitting like a ground stopper. A cap made of durable rubber is then adjusted, effecting a tight closure guaranteeing freedom from germs for weeks. To prevent the collection of dust between the dropper and the neck of the bottle, a glass ring is here affixed so as to cover the groove here formed. (Manufactured and sold by Carl Gerhardt, Bonn.)

10. Halben:—Demonstration of a Procedure for the Preservation of the Macroscopic Bulb (eyeball). Permanent Preparations to aid in Instructions and Study.

The preparations are in celloidin—i. e., Photoxylin blocks which are hardened in chloroforn fumes, are cleared up in chloroform and cedar oil, are pared with a sharp knife and then, after the surface has been dried, are covered with a lac, which is furnished by the firm of Gruebler, Leipzig, upon

request of Halben. The covering gives the object a smooth transparent surface, protecting it from evaporations, shriveling and opacities.

Compared with the glycerin-gelatin method, this procedure insures greater transparency, is more transportable and admits of greater access for inspection from all sides in penetrating as well as in reflected light. A further advantage exists in the fact that this specimen permits of deeper detailed study, since it may be cut in any direction and the parts can again be covered with the lac and preserved. The preparations are very well adapted for the study with the loupe and the Zeiss microscope.

11. Asher:—Demonstration of an Apparatus for the Mixing of Spectral Colors.

From a light-source four spectral colors are projected through a Torpsch screen. By moving the spectrum the colors may be mixed, there also being an arrangment by which white light can be mixed in. The apparatus is demonstrated in the exposition.

12. Wessely:—Demonstration of Artificially Produced Retinal Detachment in Animals.

Wessely effected the retinal detachments by the introduction of hot steam, presenting drawings of retinal detachments thus produced. Despite the very rapid appearance of sub-retinal exudates. Wessely could not detect by touch an increase in the tension, but could manometrically distinguish a rise of a few millimetres in an occasional case.

The demonstrations of Howe, Addario, Motais and Treacher Collins refer to the proceedings of the Recueil des travaux du congres which have already been considered.

BOURGEOISE demonstrated:

1—Daviel's original instruments for the extraction of cataract. which are in his possession and which had been illustrated in the work of DeLacroix "Jaques Daviel a Reims"; also several other instruments employed in ocular operations of that time.

2—Spectacles of singular construction for use after cataract operation (aphakia), myopes, hypermetropes, also useful as protective spectacles for laborers.

The arrangement effecting the multiple application consists therein that there are two lenses before the eye, excepting the protective spectacle, in which the outer consists of a metal screen. The outer lens can be turned up by means of a spring hinge, so that it rests vertically with the plane of the fore-head.

The cataract spectacle consists of a near lens posteriorily with a required concave lens in front. It is to be used generally for near work, but for distance an extra, simple convex spectacle is prescribed.

For ametropes the posterior glass is also always intended for near work. The arrangement is especially useful for pupils.

This model has already been described by Bourgeois (Bulletin et Memoire de la Societe Fran, d'opht, 1894 and 1896.

In the protective spectacle the back lens consists of a plano lens in the case of emmetropes without presbyopia, if otherwise, the required lens is used. The screen is meshed different widths according to the occupation or needs of the individual.

THURSDAY, SEPT. 15.

II. DISCUSSIONS.

CHAIRMAN, DE LAPERSONNE.

2—Propositions of the French Ophthalmological Association in Regard to the Reading (indicating) of the Visual Power.

Monoyer, in a thoroughly prepared paper, opposes the propositions of the French Ophthalmologic Society. Among other defects he points out that the change to the new system where the circle is divided into "Zentiquadranten" (centiquadrants), would be fraught with unusual difficulties and perplexities. As concerns the introduction of a particular name for the visual unit, Monoyer thinks this unnecessary, and cites the example of physics in which there are a long series of such unit measures without significance (such as for density, etc.)

Monoyer arrives at the following conclusions:

The measuring of the visual acuity should in the future follow on the basis of a "minimum separabile."

The visual angle of the minimum separabile should be = 1 minute.

The indicating of the various grades of the visual acuity proceeds by arithmetical progression based on the decimal system.

The examination should occur at a distance of five meters.

V. Syklossy: The visual unit of Snellen is based upon the angulus limitis discernendi of 1 minute = 60 seconds. One, however, frequently meets with eyes that can discern at a much smaller angle. A large number of unselected cases examined in regular order of appearance gave an average value of not less than a=45 seconds, that is about 1.4 in Snellen's sense.

If now the visual power (value) (at a=1 minute) seems to be less than the unit of visual acuity, then v=1 (valued at a=1 minute) is a too high value in order to represent a unit of measure. The units of measure are in general of very low value, since the values that are to be ascertained thereby are at any event expressed as multiplicants of this unit. (Cf. Pfennig, Volt, Ohm, Ampere, M. Gr. S. minutum, gram, secundum, as a physiological unit of measure, also m. mkg. etc.) With Snellen's unit of visual acuity the matter is reversed; during consultation, as Landolt also expresses, the oculist meets with the flaws of this unit, which expresses such different variations, that they form serious obstacles to a unification. Thus it is that V-values of $\frac{5}{18}$; $\frac{6}{20}$; 0.3 should be compared.

V. Syklossy has evolved a unit of measure in which the consideration is a very small fraction of the physiological visual acuity. This unit—a unitary illumination being employed—consists of the slight vision necessary to discern a test object with a distentia separabilis of one cm, at a distance of one m. This unit is called one Acuitas, from which we derive: Index visus est Acuitas (A) tanta acies oculi quanta littera unius centimetri crassa, quinque autem centimetrorum alta et longa e distantia unius metri cernitur. [Littera illa e distantia unitatis (1 m.) sub angulo 34.376 minutes apparet—id est de ca e distantia metrorum 34.376 angulus normalis unius minutae existit.]

According to this the value of 1A expressed according to Snellen's visual value = $0.029 = \frac{1}{34.376}$. If, nevertheless, an object whose dimensions (dist. separ.) is 1/n cm. can be discerned, d = 1 m., then the value of the absolute acuities (Aa) equals An. With a distantia separabilis of $\frac{1}{5}$ cm.=0. 2 cm. = 2 mm. is Aa = A₅. If now an object corresponding to Aa can be discerned at a distance, then the acuity of vision must be — dAa; in the above case of A₅ of a distance, e. g., of 7 m., we get $aAa = 7A_5 = (A_{85}) = (An) = Acuitas$ relativa.

When the examination is conducted now with a plane mirror at a $2 \times 3.5 = 7m$. distantia examinandi, then the V-values

(Snellen) and the Acuitas-values (v. Syklossy) are of course equal.

In order to solve the extremely important problem of a unitary—uniform—illumination, v. Syklossy constructed an apparatus which he calls Universal-Examinator. It consists of a small box, in which are the various test-objects illuminated from the back in a transparent manner by incandescent lamps of definite candle power, and can be wound upon two brass cylinders. By the interposition of light absorbing glass plates (in number 1 to 20) the stipulated first illumination is gradually reduced to the desired degree. In 32 normal cases in which the visual acuity was from (28) to (70), varying accordingly from V=0.8 to V=2.0, the maximum illumination was used in the cases up to (35), but in all cases over (35) only the necessary illumination was calculated in order to obtain V=1 id est (A_{ss}). This equaled a value of 10 Hefner (H) pro m^2 , or microhefner pro $mm^2 = 10 \text{ h}$, pro mm^2 . The optotypi (test characters) in this illumination emit as much light as if for each square millimetre a 10-5 H candle were supplied (=10x10—⁶ H. pro mm² = 10 H pro m², when a microhefner corresponds to = hp. 000001).

This designation of "light-energy" is far more precise than that of the metre candle where it remains unknown how much of the light-energy is reflected from the surface of the different types consisting of pale, white, glossy, grey and solid colors.

With the "Universal-examinator" of Syklossy the visual acuteness can be quickly, accurately, conveniently and in a unitary manner ascertained.

The color sense and light perception can be qualitatively and quantitatively investigated. Simulation and aggravation can be easily detected. The Universal-examinator serves further as a photometer: the connection between light-energy (intensity of illumination) and the visual acuity can with its aid be quickly ascertained. Syklossy has also proven the correctness of the statement that the intensity increases in geometrical progression until the obtained acuteness of vision indicates an arithmetical increase, but the visual-acuity values V=0.9 and V=1.1 [id est (A^{31.5}) and (A^{38.5})] are excluded from the decimal progression. Also physiological as well as pathological cases were considered: The conclusions derived from the

intensitas absoluta (in h values) and the intensitas relativa [where I=1 with $V=0.05=(A^{1.75})$ were taken] with the obtained values of vision acuteness, are, however, very instructive, but the number is as yet too small in order that conclusive premises may be drawn therefrom. The curves of those with very acute vision, of those with normal eyes and those affected with amblyopic (pathologic) eyes, vary most assuredly to a large extent. These show still more convincing results when the light reflections are considered, (i. e., when the absolute intensity is multiplied in h values with the surface in mm² of the discerned object).

The Universal-examinator finally serves to furnish light for focal examinations and ophthalmoscopy.

Noiszevski disapproves of the use of types for sight testing; in certain cases, especially in astigmatism and "ocular ataxia" letters are easier read than appropriate figures.

He proposes the following system, based on his own extensive investigations: Instead of a visual angle he proposes that a line of one mm. be taken at a distance of three m. This corresponds better to the size of the retinal image than the customary system. Accordingly for test objects, either squares are to be used whose sides and intervening spaces = one mm., or letters the lines of which measure transversely one mm.

JAVAL expresses his cordial approval of the v. Syklossy system.

LANDOLT: The unit is the all important problem: the vision-value must always be ascertained through unitary bases and must be expressed in a unitary manner. Thus, none but the purely practical view-points should claim our consideration in selecting the unit (of the visual angle for the minimum separabile). He submits three propositions:

- 1. The principle of the minimum separabile must be retained.
- 2. Its angle of vision must be sufficiently large, so that the values derived from this procedure can be expressed in whole numbers, not in fractions.

Landolt proposes accordingly a visual angle of 10 minutes. Then the expression of former degrees of vision would simply need to be multiplied by 10; the 1, as now used, would be No. 10, etc.

3. For optotype a geometrical figure should be used; letters should be avoided. The figure should be so constructed as to require the patient to discern the distance of separation of two points, the separation of these points to be in accordance with propositions 1 and 2 above stated; but as to the other charac-

teristics of the figure, these should remain a matter of choice—the minimum distance for the examination should be 5 meters.

Percens has instituted experiments, which show that the principles of Landolt's test characters do not meet the requirements. The discernibility of them depends upon other factors than the thickness of the circumference-line, which in breadth equals the point of intersection; besides this much depends upon the entire form of the figure.

SIEGRIST: The adoption of a universally recognized, uniform optotype is of the highest importance: we must therefore dispense with the letter test. The known uniform optotypes are: The hook of Snellen with its modification, the open ring of Landolt and the Sulzer circle intersected by lines. The latter are not uniform and are impractical, since looking at them at length causes an unpleasant sensation. The interrupted ring of Landolt is theoretically the best optotype.

Siegrist desires a uniform progression in the vision test on the decimal system and moves its submission to a committee, with a view to the adoption of the Landolt ring with decimal progression.

Berry favors the retention of the principle of a minimum separabile and the Snellen system of optotypes.

STEIGER desires to express his support for the Landolt proposition as regards the visual acuity, desiring also to dispense with letters. He considers the Snellen hook and the Landolt ring as practical, but the Sulzer plate he deems as entirely faulty, for the reason that the several optotypes are placed too close together.

GULLSTRAND moves that all of the propositions of the French Ophthalmological Association, with the exception of one and two, be rejected, and joins Siegrist in declaring the Landolt interrupted ring as the most practical.

Sulzer emphasizes the fact that in the discussions on visual acuity, the principal point of the intended theme of discussions had not been touched upon, viz.: the relation of the vision-power after injury to the earning ability of the injured.

He further elucidates how he arrived at the factor of progression of the degrees of the vision-acuity 1,259, during experimentation.

Forty years ago, Green (St. Louis) computed this result and experimentally substantiated the same.

JAVAL discusses the Snellen and Landolt optotypes and also the Sulzer idea.

SNELLEN: 1. Besides the visual angle it is necessary that the distance be considered at which the test is made. The

minimum should be six metres. When the test is made at a shorter distance, uncorrected myopes will indicate a too high visual acuity.

2. Dioptres and visual acuities cannot be measured by the same measure, since the visual acuity can not be added the same as dioptres. Snellen considers the new denomination as inapplicable.

The chairman submitted the motion to a vote, viz.: That an international commission be appointed for the purpose of considering the question of visual acuity. An amendment was proposed that only such should be elected to the commission who have not already made public optotypes of their own.

Monoyer opposed the amendment on the ground that it excludes from the deliberation of the commission particularly those who have investigated the matter closest and consequently are most competent.

VALUDE favored the amendment for the reason that those who have already announced their optotypes would enjoy the novel position of judge and contestant.

The motion, however, prevailed and on recommendation of the committee the following gentlemen were appointed on the committee: Charpentier, Nuel, Hess, Dimmer, Jessop, Eperon and Reymond.

3. Discussion of Scientific Contributions.

(The numerals preceding the topics refer to the topics under which the recommendations of the "Recueil des travaux du Congres" were published and which we referred to in the preceding number of this periodical. The absence of numerals indicates that no discussion took place).

- I. Ed. Hummelsheim: A Proposition with a View of Harmonizing the Meridian Designation of Astigmatism and the Designation of the Visual Field.
- II. KNAPP: Again the Symmetry of our Two Eyes with the Meridian Plane of the Body as Contrasted with the Asymmetry of the Single Eye, with Special Reference to the Meridians.

GULSTRAND: We should adopt those methods of indicating the meridians which are employed in international navigation with the compass. The principal meridians are indicated by S=superior, T=temporal, I=inferior, N=nasal. The position is indicated by a numeral being placed between two letters. The first letter indicating the starting point, and the second, the terminal point; thus e. g., 30° S indicates that from the nasal meridian to the vertical meridian we read from

below upwards, and accordingly that in this case axis 30° is above the nasal end of the horizontal meridian. From which meridian we are to start should be left with the individual. In this manner of recording, mistakes are excluded.

KNAPP considers the Gulstrand method of designation too complicated on account of the many letters employed.

JAVAL: The most universal system, that of Landolt-Snellen, should be retained.

PFALZ: In order to avoid confusion it is best to mark (draw) in the meridian. Pfalz has used a stamp for a long time for this purpose.

STEIGER: A method that does not take into consideration the symmetry of the eyes, is to begin with to be excluded. To indicate from the vertical meridian 90° temporalward or nasalward is the most practical way.

CZERMAK: In the Snellen-Landolt system "temporal and nasal" should be replaced by "right and left," or rather + and

EMMERT has for a long time used schemata, at which zero is at the right and the progression advances to the left beyond the upper point. Emmert considers this as the most simple; the same scheme may be used for both eyes.

Dransart recommended the system of Bettremieux which he uses.

HUMMELSHEIM reiterated his previous statement.

The motion to take a vote on the Knapp-Hummelsheim proposition was lost.

FRIDAY, SEPT. 16.

DISCUSSIONS.

(Continuation of discussions on scientific contributions).

III. GOURFEIN (Genf): The Role of the Bacillus Subtilis in Eye Diseases.

Gonella made observations in a case of panophthalmia caused by the bacillus subtilis which is analogous to the one already published. The injury was caused by the splinter of a hoe during cultivation of the ground. The panophthalmia developed very rapidly. Exenteration. The splinter was found in the vitreous abscess.

GONIN (Lausanne): The Role of the Vitreous Body in the Different Forms of Retinal Detachments.

LEBER is pleased that through the investigation of Gonin his own theory is supported. He does not lay so much import any more on the absence of increase of tension by the sudden forming of a sub-retinal exudate in retinal detachment, since Wessely reported his investigations and experimental results of retinal detachment

ADDARIO: For the elucidation of retinal detachment it is especially important to keep in mind the adhesions between the vitreous body and retina, as shown by A. They exist in the entire extent of the retina, but are particularly abundant behind the ora serrata in a zone of about 3 mm, broad, and between this and the equator of the eve. Numerous fibres running at right angles to the plane of the retina, proceed from the retina into the vitreous. This cloes not only account for some of the observations of Gonin, such as the circumscribed atrophy of the retina corresponding to the point of its laceration, and the slight adhesive chorioido-retinitis at the same point, both due to traction on the retina by the contracting vitreous body, drawing on it by means of these fibres, but it also accounts for the suddenly developing detachment under the lacerations, and especially lacerations corresponding to the zone of the strongest adhesions.

Addario does not aim to establish a new theory, but rather offers a completion to Leber's theory.

NORDENSEN: The theory of Leber is most certainly illustrative of a series of cases, and the Gonin investigations are a new contribution to its substantiation.

But on the other hand Gonin is also right when he claims that this theory cannot be applied to all cases of retinal detachment. In a number of cases of ablatio retinæ, among others, that of enlargements, the exudation theory certainly offers the right explanation.

Scheffels: There are three points that seem to indicate that the Leber theory will receive general acceptation:

- 1. The experiment on animals.
- 2. The therapeutic results.
- 3. The analogy with other incidents in the body.

Noiszewski: The decrease of volume of the vitreous body is not to be considered the cause of retinal detachment. It depends moreover in most of the cases upon the fact, that in consequence of the diseased changes in the retina it has become impermeable to the flux of the filtration passing from the chorioid to the vitreous, and on account of this, namely, a vis a tergo, from this under-pressure the retina is severed from its base. N. bases this explanation upon a series of observa-

tions, in which, prior to the retinal detachment, a retinal inflammation had been proven. These observations had been made public in the beginning of this year.

TERSON voices likewise from his point of view, as Gonin rightfully claims, that the complete liquefaction of the vitreous alone is not sufficient cause for retinal detachment, because this liquefaction often occurs with ablatio retinæ, especially in high degrees of myopia.

GONIN: Closed the discussion.

VII. v. HOFFMAN: Wedge-shaped Excision (of a small Piece of Mucous Membrane).

Scheffels recommends on account of several years' experience the Hoffmann operation.

Mellinger achieved also good results with the Hoffman operation.

HOFFMAN: When incising the lacrimal duct, the cutting edge should be directed towards the eyeball in eversion, and toward the operator in inversion.

VIII. Terson (Paris): Operative Treatment of Senile Ectropion.

LANDOLT still employs the operative procedure which he announced in the Archive d'Ophtalmologie, v., in 1885, and is well satisfied with the same. He proceeds in the following manner: The lower lid is held firmly between the thumb and index finger of the left hand, the thumb on the skin side and the index being deeply carried between the lid and the bulb into the fornix. In this manner hemorrhage is avoided to an appreciable extent and at the same time a connective tissue fold is formed. From this fold a prism-shaped flap is excised with the knife along the entire length of the lid. "The edge (le sommet) of the prism should extend to the cartilage if the degree of ectropion warrants it." The first incision is the one nearer the eveball. The flap is then entirely excised with the scissors. Then two or three Streatfield-Snellen sutures are taken. This produces a temporary entropion, which disappears immediately after the removal of the sutures and healing of the wound, after the fourth or fifth day.

In extreme cases of ectropion the galvanic cautery is employed in addition.

DA GAMA PINTO: It is not the conjunctiva alone that is to be taken into consideration, but also the lengthening of the

lower lid. Accordingly Pinto divides the outer canthus and stitches it in such a manner as to give the lower lid its normal length. This produces a fold temporally which is simply removed.

Angelucci operates according to a method of his own. His object is to increase the power of the orbicularis muscle. He operates substantially on the tarsus.

SWANZY is well satisfied with the Kuhnt operation.

TERSON bases the value of his method of operation especially upon the fact that it does not involve the tarsus.

X. STEFF. SANTUCCI: A Characteristic Symptom of Tobacco and Alcohol Amblyopia.

GOLESCEANO had good results in these cases with serum therapy.

XII. A. DUANE: The Evolution of Strabismus.

LANDOLT does not believe that paralytic strabismus can pass into concomitant strabismus and vice versa. These two kinds of strabismus differ materially from each other and bear no relations to each other.

Durour emphasized the great practical significance of a certain "latent strabismus."

This applies to cases of asthenopia in which the effort at equilibration reveals a dynamic convergence (= insufficiency of divergence) usually of a moderate degree only. In these cases prismatic spectacles are of much assistance.

XIII. E. Emmert: What Relation Does the Position of the Axis in Astigmatism, as Found by the Ophthalmometer, Bear to the Position of the Axis, which the "Astigmaticia" (Examiner) Gives the Correcting Cylinders when Set in the Spectacle Frame?

LANDOLT: The fact is that patients do not accept glasses as indicated by the ophthalmometer, or rather keratometer, because with the ophthalmometer we ascertain only the corneal astigmatism, not the real astigmatism. The reason why patients do not accept the same glasses for near work which are proper for distant vision, Landolt sees in the rotation of the eve during convergence.

XVI. E. EMMERT: Causes of Myopia. The Care of Cases of Progressive Myopia.

LANGE: Based on the supposition that the elastic fibres of

the sclera influence its elasticity co-efficients in an equal measure, and therefore might play a considerable role in the development of progressive myopia. Landolt examined four myopic eyes (two of 10. D. one of 7 D. and one of unknown degree, but without doubt myopic) with regard to the presence of their elastic fibres and compared these with five emmetropic eves whose sclerae were tested in exactly the same manner as to their elastic fibres after the method of Weigert and Unna (Orcein.) It was thus ascertained that the sclera of the four myopic eyes contained practically no elastic fibres, while the sclera of the five emmetropic eves contained a great number of This difference in the amount of elastic fibres contained in the myopic and emmetropic sclera has in all cases been so pronounced, that Lange contends, since fetal eves of the 5th, 6th and 7th month, which were examined by him. contained no fibres, and since numerous eves of the newly born showed only traces of elastic fibres, that progressive myopia depends upon a congenital origin, a congenitally deficient development of the elastic fibres, and that this represents the anatomical, hereditary basis of myopia.

XVII. G. BAHR: On Early Operations After the Artificial Maturation of Cataracts.

SATTLER has also performed the early operation and recommends Bahr's suggestions.

KUHNT agrees, but he urges a cautious selection of those eyes that should be operated after the Foerster operation. This second operation must not be performed early.

Abadic operates also on immature, senile cataracts without special hesitancy. He is in this principally guided by the practical requirements: It is, above all, to be ascertained if the patient is still able to read or not. According to his experience it is by no means the case that early operations are oftener followed by secondary cataract than the operations after maturation. It is also a substantial fact that at this day we need fear the secondary operations less than formerly.

Dor often employs the operation of extraction with the capsule intact after the method of Major Smith, of India.

KNAPP opposes the Foerster operation.

SCHIRMER: In massage it is not so much a matter of pressure but more the length of time it is extended. The destruction of the anterior epithelium of the capsule is the object sought, not the mechanical destruction of the lens-fibres.

DRANSART had bad results with the Foerster method of

maturing cataract, and consequently prefers to operate immatured cataracts. He employs in this a peculiar kind of irrigation of the anterior chamber (and the sac of the capsule) first injecting the fluid and then operating.

Wicherkiewicz does not support the Foerster method of operating. He prefers to operate before maturation.

FUCHS agrees with Kuhnt to the extent that the Foerster method is not dangerous, but thinks the same can be dispensed with. He operates many unripe cataracts. When the capsule is thoroughly lacerated the remaining particles will be well absorbed.

Menacho does see danger in the Foerster operation (iritis). In senile, immature cataracts he considers the simple preparatory iridectomy without massage of the capsule as amply sufficient, especially at the 50th or 60th year.

Scheffels recommends the direct (immediate) operation. v. Hippel: In Leber's clinic also few Foerster operations are performed, but immature cataracts are extracted with good results.

SACHS: By dilating the pupil with atropin, vision can often be improved so that the operation can be delayed.

LAQUEUR is in favor of the Foerster operation, but the cases must be carefully selected.

BAHR (closing remark): It is self-evident that the cases operable by the Foerster operation are to be selected. The irritable conditions cease in about four or five days after the ripening.

XVIII. F. DE LAPERSONNE and POULARD (Paris): On the Early Discission per Scleram (Posterior Discission).

GAMA PINTO considers posterior discission in secondary cataract not a difficult operation, having formerly frequently performed the same. Pinto has, however, lately experienced two retinal detachments following posterior discission and consequently employs the anterior discission.

v. Grosz favors the Kuhnt discission.

Menacho: The discission per corneam is to be preferred to the discission per scleram: 1. Because it does not involve the region of the ciliary body. 2. Because the instrument remains in its entire course visible. 3. Because the vitreous is less injured.

DIANOUX performs the operation of secondary cataract after his modification of the Proeff procedure, by making the discission of the secondary cataract from the front, scarcely disturbing the vitreous. D. does not use Proeff's cystitome. He enters through the sclera with a broad needle, but in the region of the anterior chamber and employs then a Beed hook.

XX. A. BOURGEOIS: Treatment of Infection After Cataract Operation. (See this number of the Annals.)

ROGMAN: In such cases where we cannot procure asepsis in the operative region (even relative) in spite of all precautions, such as in cases of stubborn, chronic conjunctivitis among others, he has good results with serum injections. The serum must be anti-streptococcus and anti-pneumococcus serum.

Menacho as well as Bourgeois considers it as extremely important to recognize and combat infections early. There are painless cases of infection, at least on inception. Accordingly, he regularly examines the eye the day following the operation, which has also the advantage, that entropion caused by the bandage and the intolerance of the eye to it, can be early discovered and given attention. Both factors could cause a conjunctivitis and thus indirectly an infection. In such cases the open-wound procedure serves well. Menacho does not believe in endogenous infection. It is in these cases a matter of exogenous infection of retained cortical masses, without infection of the incised wound. They are of unfavorable prognosis and therapeutically quite inaccessible.

GAMA PINTO believes that mercury is precipitated by adding cocain: he prefers collargol.

Bourgeois: The objections of Gama Pinto do not apply to the injections used by him: Hydrarg. cyanat., is not precipitated by cocain, at least if one proceeds according to his directions.

XXI-XXV. Darier, Dufour, Senn, Vitali and Angelucci.

Wessely refers to his investigations in which he showed that remedies enter the anterior chamber, but in so small a degree that they cannot be considered as antiseptics. The acceleration in the flow of the fluid in the anterior chamber, Wessely could not confirm. The effective factor of the injection, he claims to consist in the fact that in the ciliary body an irritation arises, the same as we know to occur spontaneously to counteract disease.

ABADIE: Subconjunctival injections have a salutary effect in certan diseases, especially in inflammations, infections of

cornea and adjoining parts. They are, on the contrary, less beneficial, and even ineffectual in the majority of the diseases of the eye-ground, etc., and it is above all to be avoided that the "general" (subcutaneous, intravenous and interneuclear mercury injections are not neglected where they are indicated, such as in syphilitic iritis, etc., on account of too much dependence in the servicable subconjunctival injections in other cases.

Speier: The pain occasioned by these injections can be avoided with cocain (Burroughs, Wellcome & Co.'s tabloids).

DIANOUX refers to two methods not mentioned in the discussions: the subconjunctival injections of a solution of sugar (serum sucre) for ablatio, and the injections of gas. D. uses filtrated, sterilized air in quantities of from 2 to 4 ccm. The method is especially applicable in tubercular keratitis and episcleritis.

DARIER: Abadie is very correct: the subconjunctival injections have, like any therapy, their entire special sphere of indications. He mentions also the effectiveness of the subconjunctival hetol injections in scrofula and tuberculosis, as well as the gelatin injections in ablatio retinæ.

XXVI. CH. ABADIE (Paris): Uncommon Varieties of Glaucoma and Their Treatment.

Wicherkiewicz thinks in certain cases the treatment of glaucoma with miotics without iridetcomy is indicated.

XXVII. E. EMMETT: On the Treatment of Severe Eczematous Diseases.

ELIASBERG suggests in addition to the yellow Pagenstecher ointment, argent. nitricum, cocain and artropin. sulph.

XXXI. E. v. GROSZ: The Combating of Trachoma in Hungary.

Schweigger thinks it questionable that those affected with trachoma should be admitted to the army.

XXXV. Cl. Harms: Contribution to the Question of Retinitis Hemorrhagica, Following Diseases of the Arteria Contralis and its Branches.

GONIN: The claims of Harms go too far. G. thinks especially according to his investigations that embolus of the central artery without co-existing thrombosis of the central artery can certainly cause a retinitis hemorrhagica. This follows then from the diseased changes of the vessel walls.

SATURDAY, SEPT. 17.

BUSINESS MEETING.

Discussion on location of next Congress. The five year period is retained. Naples, upon invitation of Italy, is chosen by a large majority. Besides Italy, Russia and the United States of America extended invitations.

In behalf of the Xth International Congress, Kuhnt thanks the committee for its great labors and devotion to its duties in effecting the various arrangements of the congress.

DRUCKER & NEUNHOEFFER,

Stuttgart.

SECTION ON OPHTHALMOLOGY.—COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Pseudo-Glioma.

Meeting, October 18, 1904. Dr. S. D. Risley, Chairman, presiding.

Dr. S. D. Risley presented for study a patient, first seen at the Wills Hospital at seven years of age, blind in the right eye from Pseudo-glioma, said to have followed an attack of some pulmonary affection. At that time there was present moderate injection, which subsided under treatment. Patient was not seen again for 8 years, when she returned with the eye painful, injected, anterior chamber shallow, pupil occluded, tension increased, and a profuse collection of glistening, ambercolored flakes, probably of cholesterin, in the anterior chamber. Many of these were deposited in the lower angle and others distributed over the surface of the iris. The pain and irritation persisted under all usual methods of treatment and wellmarked symptoms of sympathetic irritation came on. ing that the cholesterin crystals might be a factor in the persistent irritation, Dr. Risley decided to remove them. A bent keratome was introduced at the inferior limbus of the cornea. the iris seized at the pupillary border, and a small, irregular portion removed. The tip of the Lippincott irrigator was then introduced, and the anterior chamber thoroughly washed with warm physiologic salt solution. No marked reaction followed. but cold compressed and atropia were employed intermittently for a number of weeks. The eye has been white and comfortable for more than three months and there was no irritation of the fellow-eve.

Case of Parinaud's Conjunctivitis.

Dr. Wm. Campbell Posey reported a Case of Parinaud's Conjunctivitis, which occurred in the right eye of an army surgeon who had been in charge of one of the hospitals in Porto Rico at the time of the Spanish War. There was marked swelling of the lids, and thickening of the conjunctiva, with large granulations, hanging by distinct pedicles from the fornix of both lids. Between these granulations there were erosions

and smaller yellowish granulations. The cornea was unaffected and there was but slight muco-purulent discharge. About a week after the ocular symptoms first manifested themselves, the pre-auricular and later the parotid nad submaxillary and retromaxillary glands of the same side as the affected eye became swollen and indurated, requiring operation to give exit to pus. The ocular condition persisted for months, resisting the usual forms of treatment with antiseptic lotions, cauterizations with silver and copper, and excision of the larger granulations. The general condition of the patient was one of depression, with slight fever. Later, symptoms of a severe nature developed, which caused the attending physicians to render a diagnosis of Malta fever.

The writer pointed out that although Parinaud had described this form of conjunctivitis 15 years previously, but 23 cases of the disease have been recorded. He said that, although the disease is undoubtedly infective in origin, bacteriological studies had thus far been negative. Parinaud was of the opinion that the disease was contracted from decayed animal matter, and suggested that there might be a connection with foot and mouth disease.

The pathological anatomy of the affection is also in doubt, Gifford believing that the infection starts with the formation of small abscesses in or below the conjunctiva, and that the granulations develop from the edges of some of the ulcerations which are left after the breaking of the abscess. Verhoeff and Derby, who have made the most recent contribution to the study of this form of conjunctivitis, believe, on the other hand, that the diseased process is a superficial one, being confined almost exclusively to the sub-conjunctival tissues, consisting essentially in cell necrosis, which is followed by proliferation of the connective tissue.

Case of Parinaud's Conjunctivitis.

Dr. A. G. Thompson exhibited a Case of Parinaud's Conjunctivitis in a colored child, aged 3 years, from the Children's Hospital. Three weeks previous to entering hopital swelling developed of posterior cervical glands, which extended rapidly to submaxillary, pre-auricular and glands overlying parotid, the swelling later extending to eyelids, completely closing them in a day. A few days later a thick, yellowish discharge from the conjunctiva appeared. Upon admittance to hospital, the eyelids of both eyes were swollen and tense, the palpebral conjunctiva chemosed and protruding, the follicles greatly en-

larged, some broken down and covered with a thick purulent secretion. The cornea was healthy, and only a small portion of the ocular conjunctiva up and out was chemotic. Bacterial examination showed no evidence of tubercle. No history of trachoma.

Applications of argyrol, 20 per cent, the use of compresses and frequent cleansing with boric acid solution caused reduced swelling of glands, and decrease in the discharge. The follicles are still somewhat enlarged and a few broken down and on the whole the case resembled convalescing acute trachoma.

There was nothing shown regarding the etiology, with exception of the fact that the father worked in a fertilizing factory.

Discussion.— Dr. Hansell referred to a severe type of conjunctival inflammation now under observation in a medical student which presented none of the ocular symptoms seen in Parinaud's disease, although it resisted all forms of treatment and was associated with swelling over the parotid gland. In response to an inquiry of the Chairman. Dr. Thompson stated that the swelling of the glands in his case preceded the ocular disease, although usually the eyes are affected first.

Dr. Posev said that last winter he had had an opportunity of seeing another case of the disease, also a physician, whose right eve became affected in a manner typical of this form of conjunctivitis. The swelling of the lids and the development of the polypoid granulation was, however, excessive, and the cornea became ulcerated, probably as a result of mechanical The course of the case was exceedingly chronic. irritation. as he understood that even now, a year after the initial symptoms had appeared, the granulations were still present. thought it of interest to note in connection with the pathogenesis of Parinaud's conjunctivitis, that in this instance the physician was a rectal specialist, that the first case occurred in a surgeon in hospital practice in Porto Rico, where the sanitary arrangements were most imperfect, and that the father of the child just presented by Dr. Thomson was employed in handling fertilizer. Although bacteriological studies have failed to isolate the germ of this disease, he thought that the glandular involvement and the symptoms of general systemic depression all pointed to its being an infective process. He thought that the more frequent involvement of the right eye indicated that the toxic substance originating the inflammation was probably carried to the eye by the hand, and that although bacteriological proof was wanting, he believed the coincidence of a possible source of animal infection to be present in too many cases not to admit the probability of the disease being, as Parinaud first stated, originated in that way.

Conglomerate Tubercle of the Chorioid.

Drs. G. E. de Schweinitz and Edward A. Shumay exhibited the specimens of a Conglomerate Tubercle of the Chorioid presenting all the typical histological characteristics, and in which they had found tubercle bacilli, and from which inoculations had produced tuberculosis of the iris of a rabbit with excessive development of tubercle bacilli. The tuberculous process had burst through the selera in two portions, and had involved the optic nerve, so that its nervous tissue was entirely replaced with necrotic tissue. The specimen had been removed from a four-year-old colored child, who presented the general physical signs of tuberculosis of the lymph glands, and who died with the symptoms of tubercular involvement of the meninges. Clinically the appearances of the eve before its removal were these: Marked proptosis, displacement of the eye downward and outward, bulging and superficial necrosis of the sclera below and to the outer side, obliteration of the anterior chamber. discoloration of the iris and a vellowish white mass appearing through the pupil space. On removal the tumor deposit was found to occupy the entire chorioid in a layer 3 to 4 mm, thick posteriorly and less produced anteriorly. There was one extrascleral nodule just beside the optic nerve, which was enormously swollen by the infiltrated process, and therefore accounted for the direct proptosis of the eveball.

Discussion.—Dr. Shumway spoke of the comparative rarity of reported cases of conglomerate tubercle of the chorioid, and of the fact that it has been said to cause hypotension, in place of glaucoma. Such was not the condition in the present case nor in the majority of cases which have been reported since Siegrist's article in 1890. The literature of the subject had been recently reviewed by Dupuy-Dutemps in the Archives d'Ophtalmologie, and the following points were given to assist in diagnosing the condition from glioma of the retina, with which it is most likely to be confounded: (1) Age of the patient. Tubercle is usually found between the ages of 6 and 20 years. sometimes later; glioma usually at an earlier period. (2) The appearance of ectasia and perforation was more rapid in tu-(3) Iritis appears earlier, and nodules may be seen in the iris. (4) There may be other signs of tuberculosis in the child, and a bad family history. (5) Response to a tuberculin test would be a positive proof. Dr. Posey said that he

had recently reported two cases of intra-ocular tuberculosis, one of which was a solitary tumor of the chorioid. As in the case just referred to by Shumway, this case showed glaucomatous symptoms. He spoke of the difficulty in diagnosing tuberculous growths in the chorioid, the media being usually more or less opaque when the case comes first under observation. Many cases are thought to be syphilitic and the diagnosis is only made by their autopsy.

A Note on Some Forms of Muscular Incoordination.

Dr. H. F. Hansell presented A Note on some Forms of Muscular Incoödination, and commented on the universal teaching that muscular anomalies depend in the majority of cases upon defects of refraction and agreed that the essential factor in the treatment is the preliminary correction of ametropia. The irregular or bizarre forms of muscular insufficiencies were classed as: (1) Non-ametropic squint, latent or manifest, and (2) squint, latent or manifest, against the rule. Many of the cases that were assumed to be regular would prove to be the contrary if the examiner would take the precaution to apply the usual tests before each eve and not be satisfied with the findings as determined by testing one eye only. The diagnosis may be incomplete or incorrect unless it is known which is the fixing eve at the time of the examination and the deviation of each eve learned, and then the differences between the results considered in their relation to both diagnosis and treatment. While it is true that primarily all functional muscular anomalies are defects in coordination, it should be accepted as equally true that the defects are materially modified by the patient's unconscious predilection for one or the other eve even in cases of binocular single vision. Variations in degree will frequently be discovered both in the tendencies and the actual turnings in all the forms of imbalance. The treatment, whether optical or surgical, is modified to conform to the variations. Thus, the stronger prism is placed before the apparently more deviating eve or the greater field of tenotomy or advancement secured upon the same eve. Muscular anomalies against the rule include divergence in H, convergence in M, upward deviation of the squinting eye in M, and downward deviation in H. The oblique muscles must not be left out of consideration in the management of such cases. We are inclined to lay stress on the straight muscles because of our greater familiarity with their action and because of their accessibility for operation. The individual action of a single muscle enters less into the problem than the coördinated action of all the muscles.

OPHTHALMIC NEWS, ITEMS, AND ANNOUNCE-MENTS

Doctor S. J. Torney of Stacyville, Iowa, has gone to London to study ophthalmology.

Doctor W. M. Sweet has been elected professor of ophthalmology in the Philadelphia Polyclinic.

Dr. H. F. Hansell has been made emeritus professor of ophthalmology in the Philadelphia Polyclinic.

Doctor John T. Krall, of Philadelphia, was recently called to St. Louis by the serious sickness of a relative.

Doctors Derrick T. Vail and Louis Stricker, of Cincinnati, have been elected ophthalmologists to the Presbyterian Hospital.

Doctors J. L. Adams and G. A. Taylor have been elected professors of ophthalmology in the New York School of Clinical Medicine.

A bequest of \$10,000 has been received by the New Amsterdam Eye and Ear Hospital from the late Doctor W. H. Crawford, of New York.

Dr. C. R. Holmes, of Cincinnati, has resigned from the staff of the Presbyterian Hospital to become affiliated with the Ohio Medical College.

At the annual meeting of the St. Louis Medical Society, December 17th, 1904, Dr. Frank L. Henderson was elected president for the ensuing year.

Doctor O. A. Pfingst has been elected professor of diseases of the eye, ear and throat in the Medical Department of the Kentucky University, Louisville.

Doctor Wintersteiner has been made professor of ophthalmology in Vienna; and Doctor Van Reuss has been made ordinary professor in the same University.

The fourth Pan-American Medical Congress was held in Panama the first week in January, 1905. Dr. H. Bert Ellis, of Los Angeles, is Secretary of the Ophthalmological Section.

Doctor W. R. Parker, of Detroit, has been elected professor of ophthalmology in the Medical Department of the University of Michigan, Ann Arbor, succeeding Doctor Carrow, who will locate in Detroit.

A new building for the Manhattan Eye and Ear Hospital, New York, is to be erected on Sixty-fourth street, east of Third avenue. The cost will be about \$400,000. The hospital will have a frontage of 118 feet and a depth of 125 feet. It will be five stories high.

BOOK NOTICES.

Refraction and How to Refract.

THORINGTON, JAMES, A. M., M. D. Third Edition, 314 pages, illustrated. P. Blakiston's Son & Co., 1904, Philadelphia. Price. \$1.50.

It is gratifying to note that this book has reached its third edition. That fact alone is evidence of its merit. In a work of this size one cannot expect the subject to be discussed as fully as in Donders or Landolt. It embodies, nevertheless, a great deal of information in a highly compressed form, and the aim of the author to present the subject in a complete and practical way has been well accomplished. The book is well arranged, but the text is harsh in many places, and ought to be rewritten in another edition, as for instance, the description on page 174. There is not enough new material or change of old to call for an extensive review, but we note, however, on page 64 that the value of the natural tangent of half the angle of five minutes is still uncorrected, the value of which is 0.001454. The book can be highly commended to the student and practitioner alike. MORTIMER FRANK.

Hand-Book of the Anatomy and Diseases of the Eye and Ear.

Roosa and Davis Hand-Book of the Anatomy and Diseases of the Eye and Ear for Students and Practitioners. By D. B. St. John Roosa, M.D., LL.D., Professor of Diseases of the Eye and Ear in the New York Post-graduate Medical School: formerly President of the New York Academy of Medicine, Etc., and A. Edward Davis, A.M., M.D., Professor of Diseases of the Eye in the New York Post-graduate Medical School; Fellow of the New York Academy of Medicine. 300 Pages, Square, 12mo. Price, Extra Cloth, \$1.00, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

This adds one more to a practically useless class of medical books, viz., the compend class. If the authors had given us such a splended epitome as Lagrange's *Precis d'Ophtalmologie*, we should have been immensely pleased. Lagrange's book is scientific, concise, up-to-date, and well illustrated. This Hand-Book by Roosa and Davis is simply a poorly written re-hash of the same old substance of which most compends are composed. Its English is something remarkable. "Each eye-

ball forms a hollow globe, filled with a clear gelatinous substance." etc.

The ophthalmometer is said to be a wonderful instrument: "By its aid the surgeon may, except in extremely exceptional instances avoid the use of a mydriatic or cycloplegic, for the purpose of paralyzing the accommodation as is necessary in skiascopy or retinoscopy." If such is the teaching of eminent New Yorkers, we feel sorry for their patients. The average New Yorker can see no further than the boundaries of Manhattan Island and the Bronx, and he is usually the last man in the world to hear of what has been accomplished by scientists residing in other parts of the globe. In confirmation of this statement we will point to page 162. In discussing the treatment of glaucoma by excision of the superior cervical sympa. thetic ganglion, the authors, after mentioning Jonnesco's work, say: "Since that time it has been performed by Webster. Bull, and Weeks, of New York, and others." Here the myopic New York idea crops out. As a matter of fact the first three excisions of the sympathetic for glaucoma, made in the United States, were operated by Ball, of St. Louis, in 1899. Inasmuch as the first case was reported in the New York Medical Journal, and the others in the Journal of the American Medical Association, it seems strange that the authors have not read about them.

A Treatise on Bright's Disease and Diabetes.

Tyson, James, M. D. Professor of Medicine in the University of Pennsylvania. Second edition, illustrated, including a section on the ocular changes in Bright's disease and in diabetes by George E. de Schweinitz, M. D., Professor of Ophthalmology in the University of Pennsylvania. Octavo, pp. xiv. 381. Philadelphia. P. Blakiston's Son & Co., 1012 Walnut street, 1904. Price \$4.00.

The first edition of this book appeared in 1881. The work at once took a high rank. The present edition has been made necessary by the advances which have taken place in recent years. The author has added new sections on acute interstitial nephritis and on the dietetic treatment of Brght's disease. Analyses of the more usual foods used in the treatment of diabetes, mellities are set forth independent of the claims of the makers. The section on the ocular manifestations of Bright's disease, written by Dr. de Schweinitz, is a most meritorious production and adds much to the value of the book.

CORRESPONDENCE.

New York, Dec. 18, 1904.

The Editor of the Annals of Ophthalmology.

Dear Sir—I have read the proof of your translation of Natanson's article, "Contribution to the Technique of May's Operation for Total Symblepharon."

I desire to protest against the name "May's Operation," given to the procedure of relining the conjunctival cul-de-sac with skin grafts, since I am not entitled to this credit.

In the reports published in the Archives of Ophthalmology. No. 2, 1899 (Thiersch grafts), and No. 5, 1901 (Wolff grafts). I refer to Hotz's article in the Annals of Ophthalmology for April, 1893. My operations were performed as a result of the knowledge derived from the study of this paper.

Hotz used Thiersch grafts for enlarging a contracted conjunctival pocket in 1888, for the relief of extensive shrinkage of the conjunctiva in trachomatous eyes in Aug., 1891, and for the correction of extensive symblepharon in Dec., 1891. He not only used Thiersch grafts for these purposes, but he kept them in place by means of a support (pledgets of absorbent cotton, and later, sheet lead), used sutures to fasten the grafts down into the bottom of the cul-de-sac, and subsequently also employed sutures for the purpose of keeping the graft in place. I believe Hotz is entitled to the credit of having introduced this useful procedure.

In 1898, Morton (Ophthalmic Record, Aug., 1898) used a line of sutures for retaining the graft, and a prothesis for keeping the graft in apposition with the denuded surface. Chambers, Gruening, Woodruff, and Weeks have published reports of cases operated upon by the Hotz method.

Subsequent to my reports in 1899 and 1901, I operated upon other cases, and have in some instances used circumferential sutures and others to fasten the graft to the depth of the conjunctival cul-de-sac. My results have been invariably favorable. The difficulties which Natanson describes in the two cases reported might probably have been avoided if the glass support had been entirely covered by a single graft of sufficient size.

Yours very truly,

CHARLES H. MAY.

ANNALS

OF

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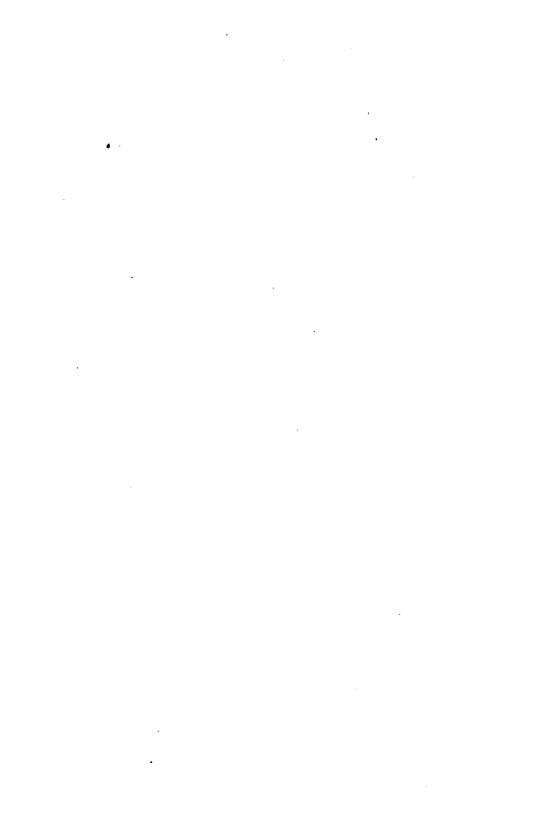
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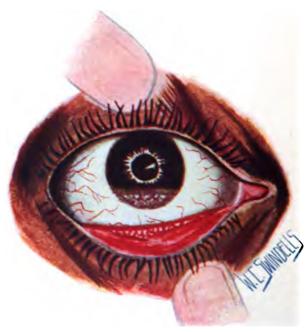
EDITORIAL NOTES.

Incorrect Statement Regarding the Annals. M UCH to our regret we are obliged to notice some misstatements regard ing the Annals. Although there has been a change in the editorial staff, the Annals will not discontinue publication. We

desire the editors of our foreign exchanges to know that the Annals will continue to live. The Annals occupies an unique position among ophthalmic publications in that, for practical purposes, it is an endowed journal. Founded by the late Dr. James Pleasant Parker, it is published by his brother, Mr. Jones H. Parker, who is in position to continue the Annals.







CONJUNCTIVITIS PETRIFICANS, SHOWING THE CHARACTERISTIC CHANGES IN THE CONJUNCTIVA.

THE ANNALS

OF

OPHTHALMOLOGY.

Vol. XIV.

APRIL, 1905.

No. 2.

CONJUNCTIVITIS PETRIFICANS.1

By WILLIAM CAMPBELL POSEY, M. D.,

PHILADELPHIA.

WITH A COLORED PLATE.

L. G., a colored female, aged 30 years, presented herself at the Howard Hospital about 2 years ago, on account of an inflammation in both eyes of long standing. She said that when she was about 12 years old, and in apparent good health. both eves became affected, though from what she has since learned from her parents, the right eve was the first and the more seriously diseased. She was taken to a clinic at this time and after several weeks of treatment the inflammation subsided, but ever since, at intervals of 2 or 3 to 8 or 10 months, there have been recurrences of the inflammation, and during later years she has noticed that the attacks last longer and are more severe and that the irritation and the dimness of vision yield less readily to the treatment which she always submits herself to.

The present attack was of several weeks' standing when she came to the clinic, having been inaugurated, as was customary, by a sensation of a foreign body in the eye and with burning and itching; there was but slight lacrimation and no discharge. She said that her health was and always had

¹This case was presented before the Section of Ophthalmology of the College of Physicians of Philadelphia, January 20th, 1903, and the diagnosis of Conjunctivitis Petrificans was confirmed by the Fellows present.

been excellent, and an incomplete systemic examination failed to discover any dyscrasia.

Inspection of the eves revealed that the lids of both eves. though more especially of the right, were thickened, and when the lids were everted it was remarked that the conjunctiva was studded with numerous vellowish-white areas slightly raised above the conjunctiva, though under the epithelium. These were most numerous in the tarsal conjunctiva, especially of the upper lid. (Figure 1). Though the bulbar conjunctiva was injected, there were no spots embedded in it and the part of the conjunctiva bordering on the margin of the lid was also free. The conjunctiva between the spots was everywhere reddened and somewhat swollen. The lower quarter of each cornea was superficially infiltrated and vascular. Under high magnifying power, this area of infiltration was seen to consist of numerous irregular whitish dots which were discrete at the periphery of the opaque zone but were confluent at the centre. The opacity seemed to be directly underneath the epithelium. The centre of the cornea was perfectly clear, but there was a faint, narrow zone of infiltration about the entire limbus of the cornea. no discharge and but slight lacrimation. Pain was absent. and there were but few symptoms of conjunctival irritation. Ophthalmoscopic examination was negative.

My attention was called to this case by my chief of clinic at the hospital at that time, Dr. E. A. Shumway, with the query as to whether I should consider it to be one of conjunctivitis petrificans. A careful scrutiny of the case at once revealed characteristics totally unlike any other form of conjunctivitis that I had ever seen; the thickening of the conjunctiva and its infiltration by large numbers of small vellowish white spots under the epithelium and scarcely raised above the surface, the absence of any great degree of irritation, and, finally, the superficial infiltration and vascularization of the lower quarter of the cornea, forming a group of symptoms which were quite unknown to me. With Dr. Shumway's suggestion in mind. I carefully read Leber's original paper upon the subject of conjunctivitis petrificans, which he presented before the Ophthalmological Society at Heidelberg in 1895, with the discussion that followed, and the report of other cases by von Hippel and Vossius, Leber's later communication in the Archives of Ophthalmology in 1900, and the report of an additional case by Reif in the Archiv für Ophthalmologie, 1900. While the case under consideration lacks the gross changes observed in some of these cases, the appearances are quite similar to those observed in the least affected eyes and in certain numbers of those which were more diseased.

In his second paper, which is one of the most remarkable examples of scientific research in ophthalmic literature, Leber not only embodies the most careful microscopic and chemical studies of the case originally seen by him, as well as similar studies of two others, but reviews in a critical manner all cases in the literature which might have a relationship with it. Of these, he judges the two seen by Brücker and von Hippel respectively, and that reported by Reif in the Archives of Ophthalmology, 1900, to be the only ones thus far reported which can be considered as true examples of conjunctivitis petrificans.

Upon account of this rarity and from the fact that no case thus far has been reported in English, I may be pardoned if I briefly review Leber's description of the disease. cording to this author, conjunctivitis petrificans is characterized by the appearance of a number of irregular white opaque spots, which are but slightly elevated above the surface and are covered by epithelium. The white spots form a marked contrast with the red of the surrounding tissue; they occur in any part of the conjunctiva and show a tendency to spread in advanced stages to the bulbar conjunctiva and the tissue In proportion to the changes in the conjunctiva. and unless the cornea becomes ulcerated from the mechanical irritation caused by the masses presently to be referred to, subjective symptoms are but little complained of. early stages of the disease, further changes do not manifest After a few weeks of inflammation, the eves themselves. become quiescent and inspection may reveal a normal con-After several recurrences, however, which may occur weeks or months apart, a number of these spots are seen to coalesce, the deeper tissues of the conjunctiva become involved and large chalk-like areas appear in the lid, which give rise to corneal ulceration. These whitish masses become as hard as stone, with an irregular surface, from which little fragments break off.

The disease is essentially a chronic one, lasting for months or even years. It may end in complete recovery, or if the ulceration has been excessive, permanent changes remain, but even these are but slight in proportion to the amount of tissue affected. At times there is a pericorneal zone of infiltration but generally the cornea is unaffected, unless as the result of extensive ulcers in the conjunctiva. Nothing is known of

the etiology of the disease. The health of all the reported cases was good. A bacillus could not be isolated though Leber is evidently inclined to regard the disease as being of microbic origin. Chemically, Leber found the spots to be deposits of lime in the tissue of the conjunctiva, either in the form of carbonates, phosphates or crystals. The precise nature of this infiltration, however, he was unable to determine. Under the microscope, an excised portion of the affected conjunctiva could be divided into three layers, a superficial, which resisted all stains and was completely necrotic; a second, in which the process of calcification appeared to be active; and a third, the deepest of all, showed simple subconjunctival round-cell infiltration and engorged blood-vessels.

Treatment consists in the repeated and thorough removal of the masses from the conjunctiva by mechanical measures and the employment of mild antiseptic lotions and warm compresses. Internal medication is useless.

The case which I report has this in common with all three of the cases described by Leber, von Hippel and Reif, and which might be considered, according to Leber, as the essential characteristics of the disease, viz: irregular opaque white spots, situated in the conjunctiva under the epithelium and projecting but little above the surface; but few symptoms of irritation, and scanty secretion; a tendency to spontaneous disappearance without trace in the early stages. It is of interest to note that all of the cases thus far reported have been in young females.

The treatment of the case which is presented to the Society consisted in carefully dissecting out many of the chalky areas, in the employment of a boracic wash and of a solution of atropin. Dr. Shumway made a hasty chemical analysis of some of the kernels, and found that they dissolved slightly in nitric acid, considerable organic material remaining undissolved, though this was still further reduced in amount by liquor potassae.

GONORRHEAL OPHTHALMIA—WITH INVOLVE-MENT OF THE ANTERIOR ETHMOIDAL CELLS—A REPORT OF A CASE

By George F. Suker, M. D.,

AKRON, OHIO,

Gonorrheal ophthalmia per se does not command more than passing interest on the part of the ophthalmologist. But, when unusual complications are associated with the ophthalmia, then it does become interesting.

It seems somewhat strange that the nasal mucous membrane and the nasal accessory continues so often escape implication when one or both eyes, either in the adult or infant, are affected with a gonorrheic inflammation. Strange, because in most instances, when the discharge is profuse, some is bound to find its way at least into the alae of the nose. This is true because the cases are not seen, as a rule, until there is considerable of a discharge. In fact, from a bacteriological standpoint, the nose with its accessory cavities offers a better place. not to say pabulum, for the growth of the gonococcus than does the ocular conjunctiva. The manner of nasal toilet in that class of people among whom gonorrheal inflammations are prevalent, is certainly favorable to conducting the gonococcus to the nasal mucous membrane. Yet, rhinologists tell us that gonorrhoea of the nose is indeed a very uncommon observance. However, when present, it is as disastrous for the parts affected as when the eve is involved. This holds true for both the young and the adult. In the former, gonorrheic rhinitis is indeed a rarity and yet how often have they the ophthalmia.

It is indeed unusual for the virulent diplo-pneumococcus to produce a conjunctivitis which in its appearance, symptoms, course and sequelae closely resembles a gonococcus infection; yet, it does occur. Therefore the question of differential diagnosis is a very important feature. Especially important if the patient has been an honest, innocent victim of the infection, as now and then occurs. However, even in these innocent cases, some knowing contributary negligence may be elicited. In

view of this, a simple microscopic examination of the discharge will not suffice, but a differential bacteriologic stain is obligatory. Not that this will affect the treatment any, but for scientific interest and just accusation of patient—the same is not altogether an unimportant factor. Unless one is skilled in the microscopic examination of germs, a diplo-pneumococcus does not look unlike a Neisser gonococcus, when stained with the ordinary analin dyes. Therefore, the differential staining, the former staining by Gram's method, the latter not, is the all important criterion. A mixed infection of a diplo-pneumococcus and the Neisser gonococcus is highly improbable: it is either one or the other germ. The diplo-pnuemococcus, if present, will soon kill the other, and the inflammation is not mitigated as one would expect. One distinctive feature, however, is the length of time the purulent discharge continues. With a pure diplo-pneumococcus, the discharge is seldom profuse for more than several days; it soon becomes muco-purulent and does not go through the various stages of consistency and color as obtains in the characteristic gonococcus infection. In other words a so-called "gleet" of the conjunctiva is not a sequel of the diplo-pneumococcus, while it often is of the gonococcus.

The diplo-pneumococcus conjunctivitis responds much more readily to treatment than does the gonococcus. As to the frequency of corneal perforation or other serious corneal involvement, there is scarcely any difference. For this reason, a clinical diagnosis of gonorrheal ophthalmia or neonatorum is made possible when it may have been the diplo-pneumococcus inflammation. There is a greater liability for the involvement of both eyes in the gonorrheal than in the pneumococcal infection. As to the frequency of a pseudo orbital cellulitis in either disease, it is about the same. However, when present in the pneumococcus variety, it is not quite so disastrous for the cornea or eye as a whole, because the course of the inflammation is shorter and the climax earlier, thus obviating the undue continued pressure which is a noticeable feature in the gonorrheal inflammation.

The vagaries of gonorrhea are many, yet the affection of the eye associated with a gonorrheal ethmoiditis is so unusual as to merit more than a passing notice. There are but few such cases on record; and, as each was attended with either a partial or total loss of the eye the pari passu inflammation of these two structures is highly significant. The case about to be briefly detailed is rather unique in so far that the infection was positively innocently contracted, was unilateral and involved both the eye and the ethmoidal cells.

Mr. D., aged 24 years, in robust health, presented himself with a marked conjunctivitis of the left eye, attended by a moderate conjunctival edema of the external canthus, all else about the eye being normal. This moderate condition had continued for three days before being seen by the writer. At the same time, he said he had a "cold in the nose." Thinking the affection to be of that variety of pneumococcal infection, which often is attended by a conjunctival edema and minute hemorrhages, the appropriate treatment—argyrol 10%, ice applications, rest and 1-10,000 bichlorid irrigation—was instituted. The next day, however, there was an apparent cellulitis orbitalis with an excessive chemosis of the conjunctiva, throbbing pain, utter inability to raise or open the lids, voluntarily or otherwise. The nasal discharge was profuse and very vellow. The same was true of the discharge from the eve. An inspection of the nose (by Dr. E. F. Mather) revealed a perfect stream of pus coming from the ethmoidal cells. The extreme severity of the reaction and the nature of the pus suggested gonorrheal infection. This, however, the patient flatly denied. Yet a differential bacteriologic stain for the pneumococcus and the gonococcus (by my colleague, Dr. Mark D. Stevenson). proved the gonococcus present in great numbers.

An urethral examination was now made and not a trace of either an acute gonorrhea or a gleet could be ascertained. Two such examinations were made within three days. The source of infection finally proved to be the use of a towel in common with a fellow workman who at this time was suffering from gonorrhea.

Fifth day.—The case now presented what seemed a typical orbital cellulitis with as yet no corneal involvement; temperature 101.5°F. The ethmoidal cells were opened, drained, and flushed; silver nitrate solution was applied daily directly to the eye as well as to the cells, continuous ice applications and mydriasis ordered.

Sixth day.—Scarcely any improvement; temperature 102°; lids tense; marked conjunctival edema, cornea fairly covered by it; moderate exophthalmos; severe pain, nasal discharge less—canthotomy.

Seventh day.—Marked improvement in every particular; temperature 101°.

Eighth day.—Cornea a trifle hazy in upper inner third; temperature 100°.

Ninth day.—Pain still severe, orbital cellulitis (?) better; discharge from nose practically nil. Cornea more hazy, temperature 99.5°.

Eleventh day.—During the night one "severe touch of pain." On morning visit, rupture of cornea was seen in upper inner quadrant with a large prolapse of iris into the gap; practically no discharge from conjunctiva and very little from globe; no hypopyon developed. Scarcely any iritis supervened. The nasal condition pronounced satisfactory by Dr. E. L. Mather.

Twelfth day.—The case from now on made an uneventful recovery as one is accustomed to see in this class of cases with complications.

Three weeks later:

About two-thirds of the corneal area is clear, patient has moderately serviceable vision in temporal field; fundus is clear. There are several firm iritic synechiae to lens capsule. But little dilatation of pupil under atropin; still, the pupillary area is clear and the lens is not involved; pupil displaced up and in a trifle. The cystoid prolapsed iris-cicatrix gave no trouble. However a tendency for developing corneal staphyloma and more iris-prolapse was quite evident.

Fortunately, the cornea ruptured at so late a day, when the orbital cellulitis was on the rapid decline, and the lids could be well raised, and the greater virulence of the infection as well as the quantity of the discharge being at a minimum that the eyeball escaped a panophthalmitis. Again, the intra-ocular vis a tergo, due to the apparent cellulitis, firmly pressed the iris knuckle into the corneal opening, thus effectually blocking any entrance of germs into the anterior chamber.

The existence of the external canthal edema of the conjunctiva at the onset, with the discharge from the ethmoidal cells; the rapid apparent cellulitis and the scant conjunctival discharge; and the peculiar radiating pain, all in all, suggested a suppurative ethmoiditis with a perforation of the plate into the orbit. This would have been a reasonable supposition had not the bacteriologic examination proved it a gonococcus infection -rather believing in a separate infection than a perforative ethmoiditis. Even so, a perforation of the cells might take place in such circumstances, but the condition would have to be of longer standing than in this instance. The two conditions developed pari passu and had no interdependent etiologic connections other than the gonococcus. In this case the temperature, the small amount of conjunctival discharge, the apparent cellulitis, coupled with the nasal discharge and the canthal edema were indeed suspicious clinical evidences of some accessory cavity involvement—perhaps due to the pneumococcus or staphycococcus—in the absence of a microscopic examination of the discharge from the two sources, namely, nose and eve. After every vestige of reaction had passed away, and several microscopic examinations revealed the absence of any virulent or specific microörganism, the eye was operated upon.

A double pedunculated Kuhnt's conjunctival flap was taken from the nasal side of the conjunctiva, made large enough to allow for possible flap shrinkage. The whole of the prolapsed iris was now excised. A cataract knife was entered at the base of the hernia, fairly well back in the healthy cornea, the counterpuncture was made in similar corneal tissue, the knife passing through iris tissue into the anterior chamber. A corneal section was now made and this hernia was removed, rather excised. Care was exercised so that the corneal wound had a shelving edge in order to offer a larger raw surface for the flap to adhere to. After cessation of hemorrhage, the graft was placed in situ and fairly well pressed into wound. Caution was observed not to allow the flap edges to roll up. The ends of its four corners were held fast by sutures passed through to adjoining conjunctiva. They were removed 72 hours later. The eve made a good and rapid recovery. The flap and sutures caused very little reaction. Ten days later an iridectomy was made in the temporal quadrant of the iris, which finally gave the patient very good vision.

The interesting points in the case may be briefly summarized as follows:

- 1. The rapid course of the infection.
- 2. The involvement of the ethmoidal cells.
- 3. The scanty conjunctival discharge, though a gonorrheal infection.
- 4. The iris-prolapse effectually checking a panophthalmitis in that it was a barrier to the ingress of germs into the globe.
 - 5. The retention of serviceable vision.
 - 6. The possibility of error in diagnosis.
- 7. The absolute innocence of the patient in contracting the infection.
- 8. The combined operations, a double pedunculated Kuhnt's conjunctival flap and an optical iridectomy.

ON SOME UNUSUAL EFFECTS OF IODID OF PO-TASSIUM.*

By H. GIFFORD, M. D.,

OMAHA, NEBRASKA.

Beside the corvza, headache, digestive disturbance, and discrete pustular eruption which every practitioner sees from the use of the iodids. I have seen a few cases of such rare forms of disturbance that they seem worth reporting. In three of these, the disturbance consisted in a phlyctenular eruption of the conjunctiva. In two, the eruption on the conjunctiva was not extensive but was so painful that it necessitated stopping the iodids. The third patient was A. R., an American. aged 37, who came to me September 14th, 1898, on account of rapidly failing vision. The right eve showed extensive foci of old chorioiditis with vision 20-200; in the left eve the vitreous was so full of opacities that the fundus could not be seen. V=fingers at six feet. He had an obscure history of syphilitic infection several years before, and he was started on the saturated solution of iodid of potassium three times a day. the dose to be increased by five drops each day. On the 21st the right eve began to feel bad, and on the twenty-fourth, while taking one hundred drops of the solution at a dose, the eve became so painful that he stopped work, and returned to me from his home in a neighboring city. I found the right eve deeply congested and much irritated, with the upper two-fifths of the limbus taken up with several partly confluent, flattish pustules of a distinctively yellow color. The smallest were about 1-16th of an inch in diameter, the largest nearly oneeighth of an inch. The latter encroached nearly 1-16 of an inch on the cornea proper. Two similar pustules existed at the lower margin of the cornea. The left eye was externally normal, and there were no signs of eruption on any other part of the body. Cultures made on pig serum from the contents of these pustules showed numerous colonies of the xerosis bacillus and a few of the white pus coccus. These pustules were entirely different from anything that I have ever seen

^{*}Read before the Douglas County Medical Society, November, 1904.

before or since: in fact, this is the only case in which I have ever been able to obtain genuine pus from an eruption on the Ocular conjunctiva. In no other case have I been able to obtain from the conjunctival pimples which we call phlyctenules, a perceptible amount of what would unquestionably be called, from a microscopic standpoint, pus. When cut into, one generally obtains nothing but blood or at most a little serum, so little that it is difficult to be positive about. But in the present case, each of these pustules, beside being larger and flatter than an ordinary phlyctenule, contained a small amount of unquestionable pus. The presence in the pus of the xerosis bacillus and the white ous coccus, both of them regular inhabitants of the conjunctival sac, was undoubtedly due to a secondary invasion of the initial lesions produced by the iodid. In this case all the inflammatory eve symptoms subsided quickly on withdrawing the iodid and did not return when the drug was given, later, more cautiously.

In a fourth case, the patient, a man of about 45, had a central corneal scar which was the seat of a low grade, but very obstinate irritation. For some reason I thought best to give him a moderate dose of the iodid, but after he had taken it only a day or two a small abscess developed deep down in the corneal scar, accompanied by a marked increase in the congestion and irritability of the eyes. This abscess reached a diameter of about 3-32 inch, and then broke through on the inner surface of the cornea. The irritation subsided on cessation of the iodid, but on trying it again, another abscess of the same sort developed and went through a similar course.

Serious eve complications from the use of iodid are not at all common, and of those which I have found on looking up the subject I will only mention the cases of Bouzitat, Hallopeau and Westoff. In the latter (Centralblatt fuer Augen heilkunde, 1898) a syphilitic man developed a severe purulent iritis while taking a moderate dose of iodid, which became controllable only when the iodid was stopped; a second attempt to push the iodid again produced the same inflammation of the iris. Hallopeau's case is of more general interest, (Ann. de Dermatol. et Syph., May 25, 1888.) His patient was a man of 45, in whom the iodid produced a marked pemphigus and upon the breaking down of the bullæ, condylomatous vegetations developed which finally healed, leaving depressed scars. This eruption occurred repeatedly after a single gram dose of potassium iodid. The bullæ occurred on the skin and on the tongue, some of them being filled with a thick, turbid fluid, others with blood. The conjunctiva was congested and finally a serpent ulcer developed on the left cornea, which perforated and caused a staphyloma to develop. He also mentions another man who on taking iodid developed similar skin lesions with phlyctenular ulcers of the cornea, which finally reduced the vision to the perception of hand movements.

A case resulting even worse, so far as one eye is concerned, is that of Bouzitat (Recueil d' Oph., Oct., 1903.) His patient had a double lacrimal stricture and, after taking 60 grs. of potassium iodid a day, developed corneal ulceration from which one eye was entirely lost and the other was badly injured. The ulcerations were rebellious to all ordinary forms of treatment until the iodid was stopped, when the healing began at once. Bouzitat states that patients with lacrimal stricture are especially liable to conjunctival troubles when taking the iodid.

GASTRITIS, PERITONITIS, DEATH,

KLIENEBERGER (Abst. in Centralblatt f. Bacteriologie, 34, p. 322), reports a death occurring after a patient had taken three and five-tenths grains of the iodid. Within three days gastritis developed, followed by peritonitis and death. The sequence in this case is obscured by the fact that the man took about five grains of calomel after stopping the iodid.

EDEMA OF THE LARYNX.

GROENOUW (Abst. in the British Medical Journal, May 10th, 1890), has collected nine cases of edema of the larynx from taking iodid in doses ranging from three to two hundred grains. The larynx symptoms generally manifested themselves in from twenty-iour to forty-eight hours after beginning the drug. Some of his cases called for tracheotomy, but none were fatal. Unless I am very much mistaken, however, I have somewhere seen a report of one or more fatal cases of edema of the glottis from the use of iodid, but have not been able to locate them.

GLANDULAR AFFECTIONS.

FOERTH (Wiener Klin. Woch, 45, 1901), cites a case from Rose in which, following an injection of Lugol's solution into an ovarian cyst, enlargement of the parotid gland with extreme salivation occurred, ending in paralysis of the heart. Fürth also mentions cases reported by Rieder and Villar in

which iodid had caused inflammation of the parotid and then reports a case of his own in which the patient, a 52-year-old man, who on taking a moderate dose of sodium iodid, developed an extreme swelling of both submaxillary glands, with much headache and palpitation of the heart, but no salivation. In fact the throat was abnormally dry; prompt recovery ensued on stopping the iodid, but later, on taking a single dose representing about 8 grs. of the iodid of sodium, the same inflammation of the submaxillaries occurred again.

Inflammation of the lacrimal gland as a symptom of iodism has been reported by Prioux (Ophthal. Klinik, Jan. 20, 1903). In his case the patient, a 36-year-old man, had taken 10 grs. of iodid three times a day for several days when he developed an inflammation of the lacrimal gland so severe and so acute that suppuration seemed imminent, but on stopping the iodid the symptoms subsided at once.

EFFECT ON THE EAR.

The only serious effect on the ear which I have seen mentioned as the result of giving the iodid is that reported by Blau. (Deutsche Med. Woch., V. B., p. 186, 1904.) His patient was a syphilitic who was also afflicted with a chronic purulent otitis media. This gave him very little discomfort ordinarily, but whenever he tried to take large doses of the iodid of potash an extremely painful inflammation of the external auditory canal with a reddish brown, smeary exudate developed, which ceased only when the iodid was stopped.

MENTAL SYMPTOMS.

The only case in which I have known of mental symptoms being recorded as the result of giving iodid is that of a girl, aged four years, with interstitial keratitis, whose incomplete history I find in my records in the hand-writing of one of my former assistants. Either because of the severity of the symptoms or on account of marked signs of active hereditary syphilis, or through a mistake, she was given 25 drops of the saturated solution of the iodid three times a day. The mother returned after a week or more stating that she had tried the medicine on several different days, but that each time the child

In view of the recent reports of a marked aggravation of the symptoms of Graves' disease produced by the iodid, it is interesting to note that Trousseau described a form of iodism which simulated this disease.

had become delirious and had remained so until the iodid had been stopped for a day.

PAINFUL AFFECTION OF THE FEET.

The only instance of this sort which I have met with or heard of is that of a male patient of mine, aged 56 years, who came to me on account of a paresis of the left external rectus. In other respects his health was fair and he had no history of syphilis. He was given the saturated solution of the iodid of potash, but on reaching a dose of about 35 drops, three times a day, he was obliged to discontinue the medicine on account of a very severe pain in the ball of each foot. This recurred several times on his recommencing the iodid and instead of becoming immune to its effects he became more sensitive to them, so that finally a dose of 5 drops three times a day would bring on the pain. This pain he described as intolerable, but it had nothing of an inflammatory character, since it was relieved rather than increased by pressure and massage. He had no other symptoms of iodism at any time.

IODIC PURPURA (FOURNIER).

Although this condition was described by Ricord in 1847. Fournier in 1877 (Rev. Mensuelle de Med. et de Chir., 1877. p. 653), described three cases of it as something extremely rare and apparently, to his mind, new. His patients were two syphilitic young men and one syphilitic woman of 30 years. all of whom, on taking moderate doses of potassium iodid. repeatedly developed numerous petechiæ on the legs between the knee and ankle. These were small, from 1 to 3 mm. in diameter, mostly roundish or oval, with a characteristic reddish purple color, not raised above the surface, not disappearing on pressure, nor at all painful. Fournier insists upon the localization of these spots on the lower limbs; none occurring on the thighs or elsewhere on the body. I have seen two cases of this affection. In the first the patient was a young woman of 18 years without any suspicion of syphilis, but with a beginning atrophy of the optic nerve. She was given a saturated

²Since writing the above Dr. Geo. L. Strader, of Cheyenne, Wyo., and my colleague, Dr. Bicknell, have each told of a similar case. Both patients were women who repeatedly had severe pains in the feet, on taking the iodid. It would stop promptly when the medicine was stopped, and begin again with its resumption.

solution of potassium iodid, and two or three hours after having taken a half teaspoonful dose twice, she noticed reddish spots on the legs. On her reporting this to me I found the skin of each leg from the ankle to the knee covered with irregularly shaped reddish, purple petechiæ from the size of a small Din head to a quarter of an inch across. These were not creased, and did not reappear with the dose of about one-half give any pain. They were more numerous on the inner side and back of the legs, none occurring above the knee. She continued the iodid and the spots disappeared, but on increasing the dose to a teaspoonful of the solution three times a day, they reappeared but disappeared again when the dose was decreased, and did not reappear while the dose of about one-half teaspoonful was continued, until some weeks later, when, without raising the dose, they again appeared immediately after she had attended a picnic and had been on her feet a great deal through the day. Some two weeks later, while again taking a teaspoonful dose, she had another attack of the same form of purpura, this time accompanied with frequent attacks of nose-bleed to which she had never before been subject.

My other patient was a girl of 14 years (both this girl and the Other were blondes) with a fresh choriodo-retinitis in the right eye. While taking 40 drops of the saturated solution of potassium iodid, she twice had a purpuric affection of the skin of the legs. In this case the petechiæ were on the average smaller than on the preceding case and were mostly confined to the inner side of each leg, but a few occurred just above the knees. They were not painful but when sweating freely influence of pilocarpin, they itched considerably.

The Dictionnaire Encyclopedique des Sciences Medicales, 16, 9, 355, etc., states that while this iodic purpura is almost always smited to the legs, it has been observed on the face, and on the body.

Of quite a different nature from the cases just recorded is that of Stephen Mackenzie (Lancet, 1878, p. 832). The patient was an infant five months old with congenital syphilis. It took a single dose of 2½ grains of potassium iodid and about three-quarters of an hour later the face began to turn purple. When it was seen three hours later, the whole face was swollen, purple-black in color, the eyelids closed from extravasated blood, lips and chin tensely swollen and almost black. There were a few spots on each arm and on the body were a few abortive pustules. The spots on the face and head could be seen to increase while they were watched, until nearly all the skin above the neck was covered. The next day the

face was of a port-wine color and purpuric spots occurred on the arms and legs. The skin necrosed and death occurred 68 hours after taking the medicine.

Of interest is the frequency with which severe iodic symptoms have been observed in syphilitics. This may in part be explained by the greater frequency with which the iodid is given in syphilis, but in some cases there seems to be no doubt that the syphilis produces a hypersensitiveness to the iodid. This fact is analogous to the production of hemoglobinuria by a dose of quinin in the so-called black-water fever of the tropics, an affection of malarial origin which can generally be cured by quinin, if taken early enough, but in which, at a certain stage, the attacks of black-water are undoubtedly precipitated by the same drug.

Finally, in our enthusiasm over the benefits to be derived from the use of the iodids, it may be well to keep in mind the case of the famous physician of Genoa, Coindet, who used the drug so frequently and with such marked effect, that for quite a period he could hardly venture out of his house without being stoned by some of the patients whom he had dosed with it.

LATENT HYPERMETROPIA, THE CAUSE OF THE DIFFICULTIES ATTENDING REFRACTION WORK

By Lewis S. Dixon, M. D.,

ROSTON

Why is it that refraction work, with its increasing demands upon every oculist's time and attention, is so tedious and so unsatisfactory in its results, notwithstanding all the patience and earnest work bestowed upon the subject?

Why is relief and success so great in some cases, and so hard to obtain for the majority of those suffering from the same symptoms? Why are the gratifying results we do get often so temporary, and after a while our work need to be done over again?

Why do so many patients drift from one reputable oculist to another, searching for help that no one seems able to give them? If our knowledge were sufficient, our methods reliable, and the cause of eyestrain, with its long train of nervous reflexes, could be fully discovered and corrected, comfort and lasting relief ought surely to follow.

In the endeavor to search for the cause of these unsatisfactory results, in the many puzzling, tedious cases that have fallen to my share, for many years, latent or undiscovered hypermetropia, was so often found, finally, to have been responsible for slow progress or failure, that the habit grew of searching for it, and studying how to detect its presence, the result of finding it surprisingly often, and in unexpectedly large amounts, when hunted down to its full extent. Going still further, it was found to satisfactorily answer all the above questions and prove a pass key to all my difficulties, although some of the locks were decidedly rusty. in accordance with this idea, for the past fifteen years, in a practice wholly devoted to refraction, the results of complete correction wherever it could be carried out, have been so good, Sure, and often so far beyond expectation, that the belief Steadily grown stronger, that latent or undiscovered hypermetropia, under various disguises, is the principal, underlying cause, not only of the unsatisfactory results in relieving eyestrain, but also, of a very large part of the nervous disturbances elsewhere, that mar and spoil the ease and comfort of so many lives.

But the term latent hypermetropia, means more than the small amount which is easily brought out by urging, or which is uncovered by the use of mydriatics; it means a persistently concealed amount, large or small, which may, for a long time, defy detection by any means we have at our disposal; but which patience and persistence can force out into plain view, and prove to be the hidden source of previous failure of success

I hope to show to all, who will give a fair hearing, that it is not only very reasonable, but a fact, that hypermetropia is the rule, not the exception; that of necessity, it must be, in part, latent and difficult to discover; that this persistent latency is capable of explaining all the conditions as we find them; that it is the only optical error that can elude our present methods of examination and correction; and that any undiscovered or uncorrected portion, must, sooner or later, cause trouble. Since its presence and harmful influence can readily be proved by any one who will make a diligent search, I cannot help desiring that others should investigate the subject for themselves, and see if they are not convinced of its truth.

May I go back to the very beginning, so as to point out my road clearly? The origin of evestrain is of course easily and directly traced to the muscles involved in the optical adjustment of the eyes; for the refractive and perceiving elements are entirely passive in their functions. But strain and fatigue of muscles does not come from the proper or normal amount of work, for which they were intended; that should make them strong and keep them healthy. It is work that is too hard, or too constant, which causes strain, irritability, exhaustion and injury. A man may use his muscles vigorously, but intermittently, every day, doing an immense amount of work, without harmful fatigue. But if, while lying down and resting every other muscle in his body, he tries to hold his arm a little off the lounge he lies on, for half an hour, the task will tax his nervous system beyond endurance. not the amount of work, but the lack of rest that exhausts. Rest is absolutely necessary for health and the ability to work.

So, normal eyes can work hard and long without eyestrain, because they can rest at will, by looking off at the distance. But eyes that under the natural laws of variation, depart from the typical, perfect shape and adjustment, which is the primary

necessity of every good optical instrument—abnormal eyes, must make a demand on their muscles of accommodation, for constant work; for they are obliged, in every act of vision, to correct as far as possible, their permanent irregularities; therefore, they are without rest while the eyes are open, and must be more or less disabled for ordinary work.

It is in measuring and correcting these very abundant errors of shape and adjustment, that the oculist is expected to give relief. Since these errors are optical and physical, it would seem that the application of the laws of optics, a branch of science almost mathematical in accuracy, should make the task an easy one. Experience, however, proves it to be full of difficulties, disappointments and uncertainties and sometimes quite hopeless, if comfortable use of the eves is the result Where lies the trouble? In instruments and methods, or in the eyes themselves? The instruments and methods in general use, prove always thoroughly reliable, and beautifully exact, when used on any other optical instrument, as every one can easily prove. Though we may make mistakes with them, they make no mistakes. Making a picture of the clock-dial card, with an astigmatic lens in front of a camera—one can make the blackest lines vary 90 degrees, by altering the adjusting screw; but the ophthalmometer will never err in measuring the position of the axis, or the power of the cylinder.

The retinoscope will never tell conflicting stories when applied to a camera, unless some one meddles with the focussing screw. Why is it then, that when used upon eyes, results seem so unreliable and at such variance, often, with subjective tests? Because muscles, in a living eye, especially when tired and irritable, do not act like drawtubes or adjusting screws; because they are not under the control of the observer, and only very slightly under that of the owner; but they are governed by automatic habit and association derived from previous experiences. Given an ametropic eye with its ciliary muscle actually at rest—with the accurate tests we have, there should not, there could not, be any appreciable difference in measurement of its optical errors at different times, or by different observers.

The ciliary muscle is the only variable, uncontrollable element, and it easily deceives instruments, observer and patient. Fortunately, it can, of necessity, deceive only in one way; it cannot relax too much, for, when not in use, it ought to let go entirely; but it can keep at work more or less, even if urged and expected to rest.

But why does it not relax completely? It needs rest, suffers for want of it, and we are anxious and able to give any amount of assistance needed to obtain it. The muscle does not relax fully, because it actually cannot, it never learned how; it never could rest while the lids were open, without causing blurry vision, and that was never permitted by the owner.

We must remember that not only are eyes born with the slight variations from the typical, perfect shape which occur everywhere else in the body, but that it is an acknowledged fact, that all animals of the higher classes and practically all children during the first few years of life, are found to be distinctly hypermetropic. Nature's variations seem always to be on one side of the emmetropic line. This has usually been considered due to lack of development, for later the larger part seem to become emmetropic or myopic.

There is good reason, however, for considering slight by permetropia as the normal condition for animals and mankind originally, the main objects of sight being to distinguish either food, friends, or enemies, at a distance. When not occupied in either of these ways, having no need or desire to focus sharply objects near them, except for short periods—they in all probability relax their accommodation entirely and rest, not minding the slight haze softening the distance.

Their ever acute senses of hearing and smell would always act as trusty sentinels to warn them of danger. tion, involving very slight action of the ciliary muscle most of the time, only occasional decided efforts, and abundant rest. gives, as we find in animals, savages, sailors and hunters an exquisitely delicate power of adjustment, accurate estimation of distance and keen vision. Civilization introduces other From earliest babyhood the child is shut in by walls, and its interest is constantly aroused to notice things dangled in front of him or put into his hands for study and As time goes on, he is taught to amuse himinvestigation. self constantly, with toys and brilliant pictures. Left to himself but little, he is educated to desire clear sharp vision constantly, and gets it by the compulsory use of his muscles of accommodation. This quickly becomes a habit and his only It becomes so closely associated with open lids, and every moment of conscious vision, that he never learns to rest, by looking off and relaxing completely. No desire for it is ever started, no taste of its enjoyment is ever experienced. To his fresh, active muscles, no fatigue comes, since rest is abundant with closed lids. This one habit steadily grows

stronger, till opening the lids compels accommodation, as surely as moving one eye compels movement of the other.

Sight, like speech, if always in the same habit or language, so permeates all thought, knowledge and action, that its method cannot be changed suddenly, or easily, even if change be very necessary.

Therefore to ask a patient of any age, with ametropic eyes. to entirely relax the muscles of accommodation, and, at the same time, to notice the clearness of the pictures on his retina. is to ask an impossibility. As well ask him to talk a foreign language or write shorthand. He simply cannot; he never did such a thing; opening the lids and wishing to see, compel the associated action of the ciliary muscle. He may relax partly, if very weary, but to relax completely with open eyes, can only be done after long practice, and patient work in overcoming his original and only habit of sight. versal, congenital hypermetropia, so readily found in infants. is not outgrown, it is only masked and concealed by this habit. Anyone who takes pains to look for it, will find it cropping out again in almost every one who is not myopic, when increasing presbyopia adds its burden to the already tired-out eyes; and as it emerges, the keen, distant vision, so long the boast and supposed badge of perfect eyes, loses a few lines off the test card. But, if a weak convex glass is offered, it is sure to bring a smile, for the sight jumps back to the old Certainly the eyes, born too short, did not grow longer and then grow shorter again; nor did the lenses flatten. except as the ciliary was compelled by fatigue, to cease calling the accommodation into play to correct the ever present error. and so permit the true amount of ametropia to become evident.

This, then, is the fact to which I desire to call especial attention, that in the larger proportion of eyes, owing to their congenital peculiarities of shape, there is formed by education and of necessity, a habit involving the constant action. (while the eyes are open,) of the ciliary muscle, which certainly was intended to rest a portion of the time. This habit, being independent of the will, must tend to conceal a portion of the error causing it, from the usual methods of examination; and this uncorrected and undiscovered portion vitiates the results of our efforts to give the relief that results from rest. Persistent search will usually give positive evidence of its presence; but to bring it all out and correct it is often difficult.

Now as to the proof of its presence. Dr. Geo. J. Bull, of Paris, has shown most beautifully, in a series of photographs

of a test card, the damaging effects of putting weak convex glasses in front of the objective of an accurately focussed camera. One-fourth D. will blur, quite beyond recognition. two lines, nearly three: 1/2 D, will blur out five lines: 3/4 D. blurs out six or seven, and 11/2 D, leaves nothing discernible This result is a mathematical necessity at all times. If, therefor, a+.25 lens is put in front of an eve having normal vision with its ciliary muscle thoroughly relaxed, it must produce the same blurring effect; and no practice or lapse of time, or number of experiments would ever overcome the blur. If, however, after a few minutes, or half an hour, or ever at any trial, vision does become fairly clear for the normal line, even for a moment, there must have been, at that moment, some compensating relaxation of the ciliary muscle; for any action must, of necessity, increase the But, if the muscle relaxed, it could not have been at A muscle at work may refuse to relax even unrest before. der much urging and for a very long time; but a muscle at rest cannot possibly relax at any time.

Fifty refusals to see through a glass prove nothing; one moment's acceptance does. Failure to find hypermetropia, is never proof of its absence; finding it is positive proof of its presence. Even mydriatics very frequently fail to bring out the true amount of ametropia, as the following case, one of many, proves. Miss B., aged 35, after using a two grain solution of atropia four times a day, for three days, showed 1 D. of hypermetropia; vision 28/20 o. u. Happening to see her fifteen years later, D. V. with +1, worn ever since, was less than 28/70. With +3 vision was 28/20 o. u. and she had good accommodation for her age. She had never been free from headaches and nervous fatigue.

When a patient comes, already wearing glasses, and still having difficulty in using the eyes freely, or symptoms indicating nervous strain, I first note his ability to see at the distance with his glases on; then place a pair of +.25 lenses infront, and ask what difference they make. If the answer is "not any," I put +.50, or more, until the answer is "they dull the vision." These I leave on a few minutes, while talking of other symptoms, then test again. If now vision reaches the same line that was read before the addition, even with much hesitation, I consider it an absolute proof that the ciliary muscle relaxed to that extent, for otherwise, even +.25 must blot out two lines or more. If this test fails to show any relaxation, I request him to close the eyes for a minute, then, to notice, if at the first moment of opening the lids, vision is

clear and then fades away. If so, relaxation is proved. If this fail also, I let him sit in the dark room with eyes closed for five minutes, then test by the retinoscope at the moment of opening the eyes. In this way hypermetropia is often discovered which the patient utterly refuses to acknowledge, until a few weeks' use of the glasses brings it out readily. Anyone who will try this plan carefully, upon a patient, who is still seeking more relief, will find it a rare exception, where he cannot be led to accept, unwillingly perhaps, but actually, from +.25 to +.75 more than the correction he has already been given.

No matter how clear his vision may be with his glasses, there is a remaining tax on the ciliary muscles that must cause trouble. If a +.25 glass or more does not always reduce vision two or three lines, there must be uncorrected hypermetropia and the muscles must be at work every waking moment. That is reason enough for the persistence of nervous fatigue shown somewhere. When once muscles have been worked till they show signs of exhaustion, rest is necessary, not a partial reduction of their work. A very little constant work will keep up the strain and prevent recuperation. Where symptoms of strain are clearly present, and no error can be detected, the search becomes a hunt; and if persisted in, an error will surely be discovered, whose correction will bring relief.

Starting with the idea that smoke must come from fire; that evestrain must indicate tired muscles; that persistent weariness must be due to uncorrected error, and that searching could never reveal error that did not exist—this plan has been followed and tested carefully for fifteen years, with steadily increasing confidence in its truth; because, almost universally, good results followed where the patient could be induced to persist and learn to accept the apparently over-strong glasses; and because only temporary or tediously unsatisfactory results, followed whenever they did not do so. Carefully kept records proved conclusively, that so long as sharp distant vision was made the decisive test of the correction given, no matter how gratifying the immediate results seemed to be, relief was almost sure to be temporary, and only became permanently satisfactory after increasing the strength of the glasses, perhaps several times, during several years. That whenever success was obtained in relieving remaining symptoms of evestrain, it followed increase, not decrease of the convex element. Tabulating recently the change made by the finally accepted correction in 300 cases taken at random from my card catalogue,

where alterations had been made once or several times with decided improvement, either after my own primary, thorough examination, or that of some other reputable oculist, the results were as follows: Astigmatic corrections had been decreased in converging power, less than 1/100 D, on the average, and increased less than 1/10 D.; both too small to call for com-Spherical corrections had been diminished only 1/20 D.: they had been increased over a whole dioptre on the aver-This large increase was in addition to what was supposed to be, at first, the proper correction: and mydriatics had been used in full half of the cases. Again, records proved that though a large number of patients rebelled against the more or less constant wear, and slightly hazy glasses, and wandered off in search of more agreeable treatment: a large proportion of them came back in later years, still in trouble; and an equally large number wandered away from some one else to me, not displeased with the vision they had with their glasses, but because they found little comfort or ease in using In almost every case, uncorrected error could be found. and its correction gave increased ability to use the eves. Records also showed that where any known error was left uncorrected, (as was my habit for many years), sooner or later it brought the patient back in trouble; that reducing annoving glasses gave immediate gratification in sight, but no permanent ability to use it comfortably; that those who wore glasses for close work only, got some relief, but retained, or later developed some form of nervous fatigue, which would disappear on using the glasses for distance also; that those who did persist and get full relaxation, not only were relieved of the symptoms which led them to apply for help, but found improvement in many ways that were wholly unexpected; that when restless patients were given two glasses, one for clear vision and outdoor wear, the other stronger, for close work and indoor wear—a few months' practice usually made one as clear as the other for distance, and the stronger the more This idea has not been presented for criticism comfortable. before, because it was desired to test its application very thoroughly, and partly because there were some cases which seemed to hold out as positive exceptions in spite of all efforts. Time has, however, made these seeming exceptions, the most convincing proof of all to me; for one after another, almost all of those whose patience, or needs, led them to still persist in wearing glasses seemingly overstrong, have at last, unexpectedly, accepted them with good vision, and decided relief. demonstrating the remarkable tenacity of this habit in refusing

needed assistance. And as a stronger proof, during the last two or three years in several cases, where the attainment of any reasonable comfort or pleasure in the use of the eves seemed apparently hopeless, as a last resort, glasses a full dioptre or more, stronger than any previously tried, were given, to be worn a half an hour, three times a day, for the purpose of putting the vision into a thick fog. Invariably. enough comfort and improvement followed after a while, to make up abundantly for the temporary lack of vision, and lead the patient to wear them a good deal, and in a few of the cases they were eventually accepted with fair vision at the distance and for general use: giving such an amount of help as to indicate very surely that previous failure had come from undiscovered and uncorrected hypermetropia. The persistent obstinacy of this original habit, even for years, against all encleavors to overcome it, is almost incredible; the surety of its Presence in tedious or unsuccessful cases, is surprising; and its alertness in escaping from control, regaining its power and causing relapses, is very exasperating. It is certain that anyone who will look into and study this subject fairly, will find it not only a very real, but a very interesting fact; and he will make the acquaintance of an unsuspected opponent that has long annoved him, and that will tax his patience and ingenuity severely to overcome and dislodge.

Each person's condition would seem to depend upon whether, as an infant, he learned how both to rest and to work with open eves. If hypermetropia develops into emmetropia or myoPia early in life, the ciliary muscle learns to rest in distant vision, and eyestrain does not appear in later life. Or, if the hypermetropia is of such high degree as to cause decided fatigue. the child soon learns to give up sharp distant vision and learns to rest; saving his strength for the more attractive near Objects. He can see off, whenever it is really necessary, but chooses to go without, much of the time. He can work hard and long, for he rests when he needs it. He gets into trouble when partly corrected, for the temptation to see all the time is too strong to resist. If the hypermeis only moderate, the habit of contant work becomes ant for the future; even if myopia comes on in later The old habit always leads to over-correction, thereby continuing the strain, and causing the myopia to progress. Again, of the optical errors we are able to correct, there is but the practically, that can elude discovery and correction. My Dia cannot be concealed; one can never find less than there is; though this habit we are considering, easily deceives

us into thinking that there is more than there is. For we find many myopes reducing their glasses later in life, with unexpected relief from nervous disturbances of various forms; not because the myopia has actually diminished, but because the exhausted ciliary muscle relaxes. Corneal astigmatism cannot escape the ophthalmometer, nor can it be simulated, except to a slight degree, by the pressure of the lids resulting from over-action of the muscles of accommodation.

Lenticular astigmatism cannot escape the retinoscope, nor vary, except the ciliary muscle is at work. But hypermetropia. though it cannot possibly be simulated, can be concealed completely, from all tests or measurements, for years, by this lifelong habit of the ciliary muscle. In astigmatism and myopia. correcting glasses are accepted immediately with relief, for they do for the eyes what the eyes cannot do themselves. But the correction of hypermetropia interferes with a habit of a lifetime, which cannot be given up suddenly or willingly. Partial assistance may readily be accepted, and immediately give sharp vision and relief; but the steady pull of the part that is left, is sure to be felt somewhere. Indeed, immediate satisfaction with convex glasses, is a sure sign of partial correction: for one cannot give up an old habit completely at once. aid is offered and accepted after a while, or not, and still nervous symptoms and fatigue persist, the conclusion is inevitable that the muscles do not rest because help enough has not been Example: Jan. 1904, Miss J., aged 18 years, works in a watch factory, severe headache and nausea compel her to go home two or three days in a week; nervously tired all the time. D. V. without glasses, 28/24, but wears -.50 cv. After some practice, can read 28/30 with axis horizontal. Glasses given. March, very little help. Glasses changed to +2, D. V. only 28/70 slowly. July, some relief, goes without glasses only a little, outdoors. Ordered constant wear. October, utterly discouraged, bad as ever. D. V. still, only 28/70; ordered +2.75 constantly. Nov. 22, very great relief, able to work comfortably; D. V. now with +2.. 28/24. Will probably accept +2.50 eventually. She could not rest with +2. so did not try to, till enough help was offered.

But, it may well be asked, why, if optical errors are so universal and work such dire results, do not all suffer? Why does any one escape? Because two other secondary factors have their full share of responsibility. The seed does not grow unless planted in proper soil; and not even then, without favoring conditions. The congenital shape of the eveball sup-

plies the seed, in the shape of this habit, without which, no growth can take place. The general physique and condition of the nervous system is the soil; if health is good, and nervous power abundant, the slight strain may never be felt to any extent. But, if at any time, physique gets below par, or health is lowered temporarily by illness, anxiety, worry or nervous tension of any kind, especially if aided by hereditary influences in the same line, the seed will surely sprout and fatigue begin.

Since the work of the ciliary muscle increases in very rapid ratio, as objects approach the eve, the amount of close work done is the condition which determines the size and rapidity The seed is everywhere: the soil and conditions are abundantly supplied by modern life, and the crop is a The little sapling, is easily plucked up, or may even wither away, if the conditions do not remain favorable: but if, unnoticed, it is allowed to grow for many years, it may require much time and effort to uproot it so thoroughly that fresh sprouts will not constantly appear. Our misfortune is, that we seldom get a chance to interfere before the habit has become firmly fixed, and the strain has caused decided disturbance in the nervous system. It is this habit, I am certain which has hindered us all from making progress in the way, by decoying us into easier and pleasanter ones. It surely deluded us into regarding clear distant vision, as the final test of the correction to be given; into relying upon the only witness that cannot tell the truth. For habit makes the patient desire, and insist on clear vision, and also compels him to assist in getting it. It is easy, generally, to get good vision for an eye not diseased; and it requires little skill to offer different glasses, and combinations, and let the patient It is his advice we follow: not he ours. make his choice. Our real duty is, not to find what he likes and willingly accepts; but what he needs, and teach him, even against his will, to accept it, and acquire by practice, the advantages. sight does not necessarily carry with it ease and comfort, for a large part of our patients see perfectly well when they come. Their complaint is not of vision, but the inability to use their eves without suffering; yet there are numbers of people with ½ or 1-3 vision, who use their eyes freely on fine work, for many years, without distress, because the cause of dullness is not optical, and not to be corrected by muscular effort. lief of present prominent symptoms is another alluring resting place where this habit has tempted us to halt. that does not last, is not the proper aim. To find some error and correct it, is well; but to find it all, is still better.

emmetropia, or slight myopia, is considered the best condition for an eve, why not strive to reach it? Great gain often comes from a +.50 glass, in correcting a slight hypermetropia Why is it not equally possible, that much trouble may result from the same amount of error, which has not been found; or, knowingly, been left uncorrected? If there is any reason for attempting to correct error at all, it applies in full force, until the whole is corrected; for any error in optical adjustment is a tax on the accommodation, and it is not just to the patient to leave him compelled to complete our unfinished And what is the object of using mydriatics, if we do not correct all the error we find? This is the day of discovering the great importance of little things. Microbes and bacteria have been doing their good and evil deeds during all the past, whether we knew it or not. It is not unreasonable to believe that a slight strain, on a delicate muscle, kept up for years, may set processes at work, which cause serious re-The use of glasses for close work only, is another path made so attractive by this old habit, that we all have gone astray. Assistance in close work is, of course, willingly accepted with great relief, for partial relaxation is familiar. Complete relaxation being impossible without long practice, glasses seem only a hindrance in distant vision, and the old way seems much easier.

But the fact is ignored, that exhaustion and strain do not come primarily from close work, but from forcing tired eyes to do close work; eyes that get no rest sixteen hours out of the twenty-four; and that do not know how to accept it, if offered. Rest should not come in near vision, it belongs with distant vision; yet, knowing this, we do not even urge the patient to learn how to rest his weary muscles.

Confining our attention chiefly to head and eyes for symptoms of eyestrain, is another easy road to wander into. Good vision and free use of it, are not conclusive proof of absence of eyestrain. Latent hypermetropia borrows nervous energy wherever it can, and never pays back. Systematic search will often discover inconspicuous nervous reflexes elsewhere, holding up their hands to attract attention to this same old cause. In those exceptions to the general rule, who are willing to wear glasses because they ought, and as they ought—it is curious and surprising to note the beneficial results that follow. Dull scholars become bright, nervous irritability wears away, brains work quicker, dispositions lose their sharp corners, and the wear and tear of daily life is always diminished in some way. The importance of correcting ametropia in chronic diseases of

the eyes is fully acknowledged; but, I doubt if it is realized how often it is an undiscovered and potent factor still working against us in tedious cases, because not thoroughly looked for, or only partly corrected. Indeed, it is fairly likely, that in some cases, it is the primary starting cause of the whole trouble whose results, as actual disease, have attracted all the attention. There is also much reason for believing that the irregularities in the action of the external muscles, primarily, owe their origin to this same cause. The ciliary and internal recti muscles were certainly intended to work in harmony in adjusting the eyes; the position of rest for both, being in distant vision; and the work of both increasing in practically the same ratio as the point of fixation approaches.

The compulsory overwork and fatigue of the ciliary muscles naturally must tend to disturb the proper balance in the external muscles. This is plainly evident in strabismus, but is concealed by habitual effort otherwise. Notwithstanding efforts to correct the balance by prisms or operation, the exciting cause may still produce variations and instability. But when the ciliary muscle is thoroughly relieved from action, in distant vision, it is extremely interesting to note, how insufficiencies dwindle away, and muscles adjust themselves readily even to the abnormal conditions imposed by previous operations

Now, though the presence and influence of this habit seem to me to be proved beyond doubt, it must be frankly acknowledged that to overcome or alter it, is a task attended by such persistent difficulties as easily to lead to discouragement and The patient is the first and most difficult obstacle to conquer; for glasses and their annoyances are so universally disliked, that if he grudgingly submits to their use, he wishes to wear them as little as possible, only for close work, and to discard them completely as soon as he is relieved. submit more willingly to go without full use of his eyes and bear some discomfort rather than be tied to glasses; and yet since the errors have been, and must be always present, more or less constant wear is the one condition of avoiding trouble or of relief. He naturally insists upon keeping sharp distant vision, for he has always had it; knows but one way to get it, and cannot understand the soundness of any advice, which would tend to encroach upon it, even temporarily. He cannot realize that glasses have any other purpose than to improve vision, or that they are to correct a permanent defect, not a temporary condition; that they are to break up a lifelong habit that drags upon him like a weight; or that they can be correct, if they do not give immediate relief. He cannot comprehend that clear distant vision involves either complete relaxation, and complete correction; or partial relaxation and partial correction; the first giving rest, the second, compelling work. Indeed, he has no choice in the matter; for, as it is quite impossible for him to conform to the first way, without long practice, (being utterly unlike all previous experience,) he can only accept the second, with its wearisome consequences, and soon become discouraged because it fails of success.

For all this, he is not at all responsible, for all opticians and physicians, and most oculists, have aided in educating him to these views, by yielding to the old habit and letting it share in doing the work, because it was easier, than to oppose it. Just in proportion as advice conforms to a patient's desires and habits, it is more likely to be followed and to be asked for. Again, this habit is likely to be so strong that in spite of best intentions to break it, it manages to keep in full force by insidiously teasing the patient to look over the glasses or forget to put them on, and thus easily overpowers the weak, new habit he is trying to rear.

Another serious obstacle is the oculist himself, for he strongly objects to prescribing glasses likely to annoy his patients. or to urge their constant use, for it tends to drive them away in search of more agreeable advice, which they are sure to Also, the habit may prove so persistent, and success be so long delayed, that both patient and doctor are inclined to give up in despair. Though some eves, like some people. vield willingly, and rapidly to new conditions imposed upon them, others hang back and give up very slowly; and others still fight lustily against any innovation, and yield finally only to steady pressure, long continued. All these difficulties are facts that cannot be pushed aside easily; yet they do not, in the least, disprove the presence of this habit, or prevent the surety of its exhausting influence. I am very sure, however, that any one, who will faithfully press this method of full correction on a few of his tedious but tractable cases, will soon be convinced as to its efficacy, even if he does not choose generally to incur the tax on his patience of trying to induce people to submit to its annovances.

The practical use which can be made of this idea, involves first: a clear explanation to each patient of the reason, need and object of wearing glasses; so that they may have correct knowledge to guide them, for they do not have it now. Then, in the cases of young people, or those who have only slight symptoms of strain, making the correcting glasses a trifle

stronger than those which give the clearest vision, and advising their use all the time at home, or indoors; except on special occasions, as company, etc. Every half hour's practice, especially when not occupied on close work, means so much nervous energy saved for outdoor use, and so much gain in getting familiar with the new habit of resting. Such patients should report once in three or six months, or at any time when discomfort returns, to see if the eves will accept a slight increase: if so, give it. They can never accept any assistance not needed; but they will generally be found to need more than they have accepted before. In this way, there is little or no annovance, and rapid progress. In adults, or where nervous disturbances are great and of long standing. glasses should be used almost constantly; for distant vision will grow clearer the more the glasses are worn; and if they are anxious to progress as rapidly as possible, a second pair, ½ D. stronger, should be given for all close work, and such occupations at home as do not require distant vision. these soon prove acceptable, and often, after a while, can be worn for outdoor use also; then a stronger pair should be given for indoor use, until thorough relief from nervous symptoms, and ease in the use of the eves are obtained.

For those who are decidedly disturbed by nervous reflexes. or who have failed to get relief from previous corrections, give glasses that dull distant vision to about 2-3 of normal, with segments at the top, reducing the strength, so as to permit of fairly clear distant vision, when necessary, by lowering the head a little. These should be worn constantly. conditions are very stubbornly annoying, and but little benefit is derived from glasses moderately over-strong, glasses that fog vision decidedly, for all objects beyond three or four feet, should be constantly worn, and a lorgnette, or supplementary glass used for giving momentary and necessary distant vision. These latter cases are always slow to yield, but the increased comfort soon compensates for the myopic vision. . Relief of pain and fatigue, and ability to use the eves for near work, are the signs by which to judge of the proper correction; not the sharpness of distant vision, or willing acceptance of the glasses. Patients are generally willing to cooperate earnestly in the endeavor to break up the old habit, if they once realize the importance of it, and that the object in view is to gain comfort and the use of their eyes for close work, even at the expense, for a while, of distant vision.

Much encouragement is needed when the fight is a long one, but it must be fought to a finish, however long, or else the pa-

tient must continue to bear the painful and wearisome burdens resulting from yielding to his old habit, until presbyopia has destroyed all efforts at accommodation.

Lastly, this plan is an absolutely safe one to follow; for, contrary to the universal popular idea and that of opticians. physicians and even some oculists, slight over-correction of hypermetropia cannot possibly do any harm, or cause any strain. Under-correction must do so. It is simply carrying out Nature's own endeavor, and makes a slight artificial myopia, while the glasses are on, instead of a permanent one: which is generally acknowedged to be the one thoroughly safe and comfortable condition for eves called upon to do much close work. A little, or much haze at the distance, cannot cause pain or fatigue, cannot impair the sensibility of the retina, or weaken the accommodation. No muscle can act, no effort be made, which will cause the blur to lessen; and though for a short time the patient may experiment to his fatigue, when he finds it useless, and gives up the effort and rests, it is absolutely painless, only a triffing inconvenience. much better way to enforce rest, than the old way of keeping patients in a dark room; forbidding all close work; or using mydriatics: for all these left the real cause of difficulty to continue its exhausting influence indefinitely. It is a safe method. and a sure one to bring relief; but, unfortunately, so unpalatable, that it must be unpopular until its true value becomes known

A few cases are appended, illustrating the persistence with which this habit may oppose proffered relief, and the large amount of uncorrected error that may elude careful examination.

1. Jan., 1898, Miss McP., age 32 years. Serious trouble with eyes for thirteen years; has been under the care of two excellent oculists. One has finally given her +.75 sph. O. U. The second gave as his final formula +.75 sph. C-.25 cyl. 180° O. U. D. V.=28/24. A few trials enabled her to pick out the letters of twenty, with +1.75 O. U. These were given May, 1901. Relief for a while, but eyes lately are growing weaker; can use them but little. After several tests can slowly accept +2.75.

Nov., 1902, D. V. with +2.75, 28/20. Has much head-ache and feels tired all the time; +3.75 does not blur out twenty foot line, and is given. Oct., 1904, D. V. with +4 O. U.= 28/24. Gave +4.50 as she still had headaches. Jan., 1905. Very comfortable; uses eyes freely; D. V. =only 28/40, but

prefers to wear these rather than +3.75, for the latter give her headache with the clear vision.

2. Nov., 1899, Mr. B., age 42 years. Eyes have been a great source of annoyance for fifteen years. Has been under care of many fine oculists here and abroad. Had muscles operated upon. Still in great trouble. Wears +.25 and +.50 sph. with weak +cyl. at 50° and 130° D. V.—28/20. Can be led to accept +1, sph. +.37 cyl. O. U. ax. 50° and 130°.

Nov., 1904. Has slowly been worked up to accepting ± 1.75 with cyl. D. V.=28/24. Has had sufficient relief to induce him to continue. Tests show at least $\pm .75$ more of hypermetropia, but he is too nervous to wear very blurry glasses. He will in time, accept this addition and will not be comfortable until he does.

- 3_ May, 1895, Miss II., age 50 years. Great trouble with head and eves since fourteen years old. Under care of eminent Oculists in New York and Boston ever since. Mydriatused several times. Formulae preserved, showed her wearing in 1885 -2.25 sph = +4. cvl. 90° O. U. These had been slowly reduced by different advisers, till at above date, she wore—.75 sph. = +3.75 cyl. 90° O. U. D. V.=28/30, but was unable to use eyes even five minutes, and was in wretched nervous condition. Since 1895, under my direction, glasses have been slowly altered with benefit enough to encourage persistence, to +1.25 sph. +3.75 cyl. ax. 85°, and +.50 10h. +3.25 cyl. ax. 95°. D. V.=28/30. Oct., 1904, very comfortable, health excellent and with +2.50 sph. added for near work uses eyes quite freely and has accommodation from eight to twenty inches.
 - 4. 1891, Miss D., aged 13 years. Very nervous, almost constant headache. Four grain sol. homatropin, every ten minutes, for two hours; ametropia equalled +.75 sph. +.25 cyl. 90° O. U. D. V.=28/18.

1898, Nov. Much relieved but still has considerable headache. Goes without glasses too much. Accepts no increase.

1899, July. Had nervous prostration past year or more, much indigestion. Accepts +1.25 O. U. Astigmatism, not appreciable.

1900, April. Much better, accepts +1.50. D. V.=28/18. Refuses to wear blurry glasses. Oct. Has been without glasses much during summer, now in great distress and cannot accept +1.50.

1904, Jan. Has been elsewhere for pleasanter glasses and has worn +1. for past three years with 6°, prism, base out; very poor health. In 1901 was under the care of trained

nurse for nine months; weak, nervous and unable to use eyes to enjoy life ever since. After several sittings, could read slowly 28/20 with +2.25 O. U., 5° prism, base out. March. Much better, but still has a good deal of headache; gave +3. O. U., 4° prism, base out.

Dec., 1904. Wears latter glass with comfort but D. V.= only 28/30. +2.25 quickly causes headache. Is able now to go into company, plays golf, bowls and uses eyes freely. Did it pay to give up the fight and go back to +1. because she could see a little better?

5. 1886. Mrs. N., age 34 years. Glasses worn since ten years old, always had headaches and nausea. glasses +5, sph. O. U. D. V.=28/24. Homatropin developed a slight increase of H. Glasses were increased slowly without any satisfactory results, till in Nov. 1899, she wore +6. sph. +.75 cvl. 180° . and +6. sph. D. $V_{.}=28/24-$, still very miserable. Reading glasses +8. with cvl. Not seen again, till Oct. 1904. D. V. now with +6, and cyl=28/20. Health wretched, not in town for months; not out of doors for two months. Had to ride in on the platform, on account Accepts to-day easily, +7, and cyl. for R. weeks later, was much relieved, had been in shopping and to Made calls, and had no nausea. the theatre. Improving It is fair to assume that for forty years, her old steadily. habit has deceived her and her oculists, and has been a prominent cause of her ill health and misery; and all because she and we did not dare to use glasses that blurred distant vision.

A CASE OF ADENOMA OF THE MEIBOMIAN GLANDS 1

By Dr. G. PAUSE.

FIRST ASSISTANT PHYSICIAN IN THE UNIVERSITY EYE CLINIC IN BERN. WITH TWO PLATES.

TRANSLATED BY DR. T. T. BLAISE, MASON CITY, IOWA.

Since there are only three cases of adenoma of the Meibomian glands known in literature, it will be of interest to publish a new case recently observed.

Christian B. (male), aet. 75, born at Wattenwil, was admitted to the eye clinic on November 12, 1903. He states that about a year ago he observed a small nodule, growing slowly on the left upper eyelid. There was no pain in the tumor, nor in the lid and its vicinity, but the tumor grew during the latter months quite rapidly and occasioned much discomfort to the patient on account of its size. Patient had formerly only been afflicted with rheumatism. His wife lives and is well. They had no children. Infection negative.

Patient is well preserved at his age. Panniculus adiposus scantily developed. In place of the upper lid exists a round enlargement, fully the size of a pigeon's egg, covering well the eye and lower lid, resting on the cheek. The tumor is 4.5 cm. wide, 3.5 cm. vertically, and 2.25 cm. thick. The tumor moves with the eyelid and when the lids are tightly closed, the lower edge of the tumor is somewhat elevated. Upon closer investigation is is observed that on both sides of the tumor the greater portion of the normal lid is preserved. On the nasal side the preserved portion of the lid measures 1.75 cm., on the other 1 cm. The tumor lies between these lid portions.

The new growth is covered on the upper surface by the thinned skin of the eyelid, but no adhensions are observable. The lower margin of the surface is nodulated, while the upper portion of the surface is smooth. Above, one can by palpatation discern the globular arch of the tumor under the skin. The lower rather broad margin presents an ulcerated surface in which five, round, depressed ulcerations are seen close together. The lashes are absent here. Upon turning the tumor

¹Klinische Monatsb. für Augenheilkunde, Jan., 1905.

up an impression is observed on the cheek where the tumor rests. The eve, besides a corneal flattening caused by the

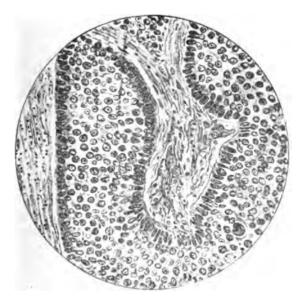
Plate I.



Fig. 1.—(a) Epidermis; (b) Capsule; (c) Conjunctiva; (d) Bursted remnants of Meibomian gland lobules. 2.—Normal acini of Meibomian glands; (f) Transformation of Meibomian glands into tumors.

pressure of the tumor, shows no other abnormalities. The side of the tumor is covered with very red conjunctival tis-

Plate II.



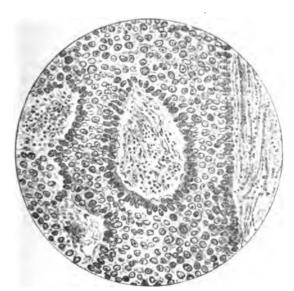


Fig. 2.—Crosscut of a septum.

Fig. 3.—Longitudinal section of a septum.

sue with a granular surface. The consistency of the lower half of the tumor is hard. In the upper, nodular, arched half, fluctuation can be felt.

In the lower portion which is of firm consistency, one can clearly discern five, round, globular divisions, separated from each other by a shallow groove. In each of these divisions glisten small, yellowish particles through the integument. This suggests the impression that the tumor consists of five sac-like parts lying side by side. The upper portion of the tumor consists of a cyst.

Patient has no pain. No enlarged glands.

On account of the slow growth of the neoplasm, the absence of pain, glandular enlargement and adhesions of the tumor to the surrounding tissues, a malignant growth could hardly be thought of. But the construction of the tumor, consisting of five separate divisions lying side by side (parallel), the locality, between two healthy portions of the eyelid, suggests the idea that we are here concerned with an enlargement arising from the Meibomian gland, adenoma of these glands being very suggestive.

On November 18, the tumor was extirpated under local anesthesia. Incisions were carried fully around the tumor, including the overlying integument. The normal skin of the lid on either side of the tumor was carefully preserved. The tumor was successfully dissected with the capsule. With skillful suturing it was possible to construct an almost normal lid.

Recovery without event. On the 28th of November the patient was discharged. It was difficult to detect a defect in the lid. The eye closed in a normal manner, from which fact it might be concluded that the orbicularis muscle was intact.

Five months after the operation the patient returned. The palpebral fissure of the left eye was somewhat larger than the right. Lid closure normal. There was no sign of relapse. The impression on the cheek which had been caused by the pressure of the tumor was still very noticeable.

Pathologic examination of the tumor revealed the following:
Making sections in a sagittal plane through the middle of the
growth, it is observed that same consists of a tumor enclosed
in a firm connective tissue capsule and of somewhat lobular
structure. On one side the thin skin somewhat adheres to the
capsule. On the other we find the rather thickened, papillary,
proliferated conjunctiva richly infiltrated with round cells. At
the upper pole of the capsule are observed two transversely
divided bundles of the orbicularis muscle between the integument and the tumor. On the other side is observed between

the conjunctiva and the capsule of the tumor a row of well preserved lobules, of the Meibomian glands, some round, others elongated, imbedded in narrow connective tissue threads. No trace of the tarsus remains, and it seems to have entered into the construction of the tumor capsule.

EXPLANATION OF ILLUSTRATIONS PLATE I AND II.

The extensive connective tissue capsule enclosing the tumor is constructed of very long bundles, whose cellular elements contain long, spindle-shaped nuclei. The capsule is closed all round, excepting at one place where the remnants of the Meibomian glands are, a break exists in the connective tissue hull Here the thick capsule separates into single strands and dips down into the tumor forming the various septa of the individual lobules. (See Plate I, Fig. 1.) The connective tissue is at all places studded with round cells, which in many places unite lymphocyte-collections. (Lymphocytenanhäufungen.) Tracing the connective tissue into the tumor it may be observed how the small lobules are everywhere enclosed by broad connective tissue septa, also larger lobuli lying side by side are observable where the connective tissue septa are ruptured by the tumor masses, so that the single lobules begin to merge into a large lobe. It is also observable that the largest lobules arose from the union of numerous smaller lobuli, because shreds of septa extend from the lobule wall into the tumor mass.

The lobules of the tumor are composed of round or polyhedrical cells. The size is approximately that of the cells of the Meibomian glands. The nuclei are generally large, round and moderately rich in chromatin. The cell-body is strikingly clear, and presents nearly everywhere the honevcomb structure of the sebaceous glands. On the periphery of the lobules, lying directly on the connective tissue septa, are visible mostly a few of elongated form and arranged palisade fashion. It seems that the propagation of the tumor cells occurs in these peripheral cells. The staining quality of the cells decreases the nearer the center of the lobules is approached, and here more regressive changes are observed. In a few of the lobules there are even extensive fields filled with cell detritus. Using a higher magnifying power it can be observed how at some instances very tender sprouts of long cells, with long, spindle-shaped nuclei spring from the connective tissue septa and penetrate far in between the cells of The tumor lobules simulate in their structure the lobules

entirely the Meibomian glands. The cells lie side by side, impinging upon each other without dividing septa.

At the opening of the tumor-capsule above described, the remnants of the Meibomian glands come in direct contact with the tumor. While those gland-lobules which lie some distance from this opening are of perfectly normal structure, these that lie in the opening, form the link in the change into the tumor-lobules. Here it is observable how the cells lose their polyhedral form, as they become round, the protoplasm showing more color until they can be no more differentiated from the tumor-cells. By examining the lobules of the tumor in the vicinity of this entrance opening, we find here and there in the midst of them islands of Meibomian gland-cells presenting more or less regressive changes. (See Plate II, Fig. 1.)

A membrana propria which separates the lobules of the tumor from its connective tissue capsule could nowhere be found.

In the smaller and smallest lobules nothing can be seen of gland ducts (lumina), but in the largest lobules, which are constructed by the merging of the numerous smaller lobules. formations are found that suggest much the appearance of gland-ducts (Drüsenschläuche). In the midst of the tumorcells can be seen one or two layers of larger, longer and higher colored cells, lying in a radiating manner about a variously shaped but always closed lumen. Between these cells few spindle-shaped cells are imbedded. The lumen presents a round, poly-angular or slit-like form, and is filled with small bundles of connective tissue, between which lie round cells, (See Plate II. Figs. 1 and 2). These are perhaps cross sections of connective tissue septa that extend from the walls of the larger lobules into the body and are cut at various angles. The cells which lie in a basilar manner in apposition with the septa. correspond to the above mentioned cells of the periphery of the lobule.

The correctness of this observation is confirmed by the examination of these tissues in serial sections. In these, one can trace the septa that extend into the tumor mass, into the connective tissue wall of the lobule.

The macroscopically visible cyst at the upper pole of the tumor is separated by a broad connective tissue wall. At the periphery are still preserved at some places a few layers of the described tumor cells, while the interior is filled with blood corpuscles, leucocytes and chromatin clumps. Hence the cyst corresponds to a softened focus of the tumor.

The vessels of the tumor are but sparingly preserved and lose themselves ultimately in the connective tissue.

The tumor is constructed of cells which may be considered offs rings of the Meibomian glands. This is evidenced by the large size of the cells and the reticular (honeycomb) structure of the protoplasm, but the source of the cells is settled without any doubt, when we take into consideration the locality where the gland lobules become transformed into tumor lobules. The cells of the tumor lie in direct juxtaposition to each other without an intercellular substance, and simulate in this the structure of the Meibomian glands. The characteristic lobulated structure of the growth and the abrupt demarkation from the surrounding tissues, also indicate that we are dealing here with a structure that sprung from a gland. Since there is nothing on which to base even a probable malignancy of the new growth, it may be assumed with considerable assurance that the tumor is an adenoma originating from the Meibomian glands.

Concerning the origin and development of the tumor it may be further stated that the very first development began in the tarsus near the lid-margin, since in this manner only could the enlargement by its gradual growth push the orbicularis muscle so completely before itself so as not to interfere with its function before and after the operation.

The clinical observation seems to substantiate the benign character of the tumor, because five months after its extirpation there was no sign of recurrence.

There are to date known to literature only three cases of adenoma originating from the Meibomian glands: from Baldauf¹, Bock², Salzmann³. In each of these cases the tumor occurred in persons of advanced age. The patient (female) of Bock, act. 59, is the youngest—all of these cases being female, ours being the only male case reported. In all cases the growth was painless and developed slowly, was enclosed in a firm connective tissue capsule and of characteristic lobular structure. Baldauf conceives that the lobules are constructed of cells that are derived from the Meibomian glands, and he also thinks the growth of the lobules takes place in the periphery, while in the center of the lobules more regressive appearances exist. Furthermore he describes in the earliest (oldest) portions of the tumor formations which are con-

¹Baldauf: A case of Adenoma of the Meibomian Glands. Munich, Ing. Diss., 1870.

²Bock: A case of Adenoma of the Meibomian Glands. Wien. Klin. Wochenschrift, 1885, p. 799.

³Salzmann: Contribution to the Knowledge of Tumors of the Eyelids. Arch, für Augenheilkunde, XXII. page 292.

structed by the cells in process of proliferation at the periphery and have the form of gland tubules.

In the case of Bock the glands are also built up from additional cylindrical cells of the periphery, while the cells toward the center assume more of an epithelial character and become partly necrosed. Lumina are observed in an occasional lobule, the origin of which is, however, not given.

Salzmann describes also the construction of the tumor lobules as consisting of higher colored cells at the periphery where propagation takes place, and the deeper the cells in the center as showing more or less regressive changes. Lumina are only mentioned as having arisen from the necrosis of cell complexes. But Salzmann observed between the tumor masses hollow spaces which he was induced to regard as lymph spaces.

From the above we can deduct that all tumors observed are constructed in the same manner. They are wholly encapsuled, present a lobulated structure formed by broad connective tissue septa. The propogating and higher colored cells are found in the periphery of the lobule, while toward the center we find increasing necrosis.

The tissue formations which in our case bear such striking resemblance to gland tubules, but proved to be cross sections of septa, were probably formerly not so observed, because these other tumors were smaller. These appearances are found mostly in the older portions of the tumor, where by the union of numerous smaller lobules larger ones have been formed. They are perhaps not so frequently found in smaller tumors.

In conclusion I wish to thank my chief, Professor Siegrist, very heartily for the kind support rendered me in this work.

THE TREATMENT OF INFECTION AFTER CATA-RACT EXTRACTION.*

By Howard F. Hansell, M. D., .

PHILADELPHIA.

Infection of the wound following the operation for cataract is one of the most distressing and serious of the obstacles to a successful result. Forunately it is one of the least frequent of the complications. Statistics collected from the figures of several operators of large experience show from 1% to 4%. the ratio decreasing in direct proportion to the strictness of antisensis in the preparation of the patient, instruments and Operator. Yet, notwithstanding the practice of all known methods by men who thoroughly believe in asepsis, the cause of the affection has not been altogether overcome. The origin cannot be traced to the same source in all cases. It may be endo Renous or ectogenous. Among the affections of the body have been held responsible are intestinal fermentation, Cistitis, diabetes, anemia, loss of vitality or recuperative power, nasal and lacrimal disease. The sources external to the body are unclean eyelashes, germs resident in the conjunctival sac, septic instruments and bandages, foreign bodies, septic hands and, perhaps, as often as any other single cause, the germladen breath emanating from the persons of the operator, assistants or bystanders.

Precautionary Treatment. In Albrecht von Graefe's day the reduction of the percentage of suppuration due to the methods introduced by him to 5% was considered a great advance and no doubt it really was. The advent of the announcement of the results of the experiments of Lister and Pasteur was almost simultaneous with the introduction of their principles into operative medicine, and, since to mechanical cleanliness was added chemical purity, the number of cases of infection has steadily decreased. Several hundred extractions without infection have been reported. Then again the same operator may have 3 or 4 cases in the next hundred. It seems therefore that the affection is not always preventable, just as in ophthalmia neonatorum some eyes must be lost despite early

and proper treatment, or in railroad traffic in spite of perfect mechanical apparatus unavoidable accidents occur.

Preventive Measures.

1. EXCLUSION OF CONJUNCTIVAL AND LACRIMAL DISEASE.

The healthy conjunctiva contains many kinds of bacteria, some innocuous, others harmful. Bacteriology can not safely be depended on as the basis of opinion as to the advisability of operation. The presence of the staphylococcus, streptococcus, gonoccoccus or the diphtheria germ may, however, be taken as positive contra-indications. The pneumococcus, the diplococcus and xerosis bacillus, on the other hand, are examples of germs that in case of operation do not necessarily lead to purulent disease.

2. EXCLUSION OF SOURCES OF ENDOGENOUS INFECTION.

Inflammatory foci in any part of the body, such as cystitis, endometritis, kidney disease, diabetes, phthisis, rheumatism, necrosed bone, carious teeth. I am not sure that most forms of skin disease may be looked upon as contraindications but my experience in operating on individuals with facial eruptions leads me to believe that they should be operated on only after the application of vigorous cleansing methods.

The exceptions to these non-operable cases are of course numerous. Some operations must be done of necessity rather than of choice. No one would decline, for example, to extract cataract from a patient the subject of chronic nephritis or diabetes after the disease is brought under control and the patient into the best physical condition; or in lacrimal disease after all measures including extirpation of, the sac or surgical closure of the canaliculi have been tried; or in chronic conjunctivitis after proper treatment. Some operations are forced upon us and unless the duty is accepted we may fairly expose ourselves to criticism.

3. PREPARATION FOR OPERATION.

The usual custom is to admit the patient the day before operation, administer a warm bath and saline purge. The following morning the nostrils are irrigated with permanganate solution, the face washed with soap and water followed by

bichlorid solution, both eyes bandaged antiseptically and just prior to operation the conjunctival sac is flushed with boric acid solution This plan is modified according to individual preferences. White (lour, Amer. Med. Assoc., Dec. 3, 1904.) has used for several years and warmly recommends the following procedure: The bath and purgative are given and the face washed with bichlorid solution 1-1.000 and finally with The conjunctival sac is thoroughly irrigated with bichlorid 1-10,000 and filled with bichlorid vaselin (Mercury bichlorid, 1 gr.: sodium chlorid, 5 gr.: boiled vaselin, 6 oz.) After boiling, the bichlorid vaselin, 1-3,000 is put away in iars until used. White claims that there is no danger from infection from without, provided the ointment is used freely. In more than 500 extractions made at the Richmond Eve Infirmary there was only one case of infection and in that, the infection was limited to one corner of the wound. Churchman and others have employed the method for years and are satisfied of its efficacy.

The preparation of the instruments is a matter of supreme importance. Not only must the instruments be aseptic prior to operation, but their aseptic condition must be maintained during the operation. Some instruments are used more than once and in the interval of their idleness are allowed to gather germs. In a perfectly smooth operation this is less likely to happen than when the operation is interrupted, for example, by the unruliness of the patient. The administration of a general anesthetic offers additional sources of infection by the presence of the anesthesizer, by the discharge from the mouth or nostrils of the patient, by disarrangement of sheets, etc. The only remedy against infection under such conditions is the constant watchfulness of the operator.

SIGNS OF INFECTION.

Knapp opportunely calls attention to the possibility of confusing spongy iritis with corneal infection. According to the report of the proceedings of the Ophthalmic Section of the American Medical Association, June, 1904, Cock's and Seabrook's cases described as corneal infection might have been spongy iritis. Close inspection will in most cases reveal the true condition. In iritis the upper section of the cornea becomes hazy, the anterior chamber shallow, the iris swollen and hyperemic and the anterior chamber is partly filled with a dark mass of spongy exudation. Infection appears as a white point in the line of incision, rapidly spreading until the whole cut is a dense white

line sharply outlined against the comparatively clear cornea. The anterior chamber is at first clear and later occupied by a dull white mass suspended in its upper section or protruding through the pupil. The wound may be closed or open, usually the former, because the devitalized condition of the eye and the direct cause of the infection acting in conjunction prevent closure. The edges of the incision may unite before the septic process is fairly under way, when the anterior chamber is reformed and maintains its normal depth, at least for some time.

TREATMENT—The "state of Christian resignation" alluded to by White is not always obtainable nor indeed, in view of the remedies available is it always necessary. The local therapeutics are of three kinds: cauterization of the wound, subconjunctival injections and germicides injected or inserted into the anterior chamber. Darier says, "In the presence of an infected wound of the eye the first and chief indication is to destroy as fully as possible the infectious agent in situ." For this purpose he recommends the galvano-cautery. Carra (Bull d. Roy. Acad. di Roma, XXIV No. 4) is not satisfied with cauterization alone. He reports 3 cases in which thorough syringing of the anterior chamber, mechanical removal of exudation in addition to cauterization checked an advancing purulent infection and led to the saving of a certain amount of vision.

The means of cauterization comprise the galvano-cautery, sterilization and cauterization by silver nitrate, mercuric bichlorid, carbolic acid and the thermo-cautery. The last is said by Darier to be unfit for use. With carbolic acid I have had two experiences which have proven its efficacy. In the first case the daily application of the pure acid was continued for ten days. The purulent process was completely checked and the ball preserved but annihilation of the anterior chamber and closure of the pupil destroyed vision. In the second case the wound healed and the anterior chamber reformed but other means were employed to save the ball.

2. SUBCONTUNCTIVAL INTECTIONS.

With this remedy, so warmly advocated by Darier, I have had no experience in the treatment of infection following cataract extraction. I have used it many times in purulent affections of the cornea, traumatic and spontaneous, and although I have had no bad effects I cannot say that the remedy recommends itself to me. I have injected bichlorid 1-5,000 and 1-10,000 and physiologic salt solution. The cyanid, which

seems to have taken the place formerly occupied by the bichlorid in the practice of the French clinicians, is as yet untried by me. The value of subconjunctival injections can be determined only by a large clinical experience and comparison with other methods.

OSTWALT, (Arch. of Ophthal. Vol. XXXV.) introduces flat rods or bougies of sterilized jodoform, 20 to 25 mgm. This procedure sets up no reaction in normal eves. When the lens is intact, and Ostwalt believes that the severity of post-operative infection depends partly upon the presence of lens-fragments in the anterior chamber, iodoform introduced immediately checks iritis. If introduced 6 or 7 hours after infection, 3 out of 4 cases will be checked but if 16 or 17 hours have elapsed after the onset of the infectious process the benefit will be limited to a possible retention of the globe. Should the anterior chamber contain lens-fragments, the progress of the infection is too rapid to permit the hope of favorable action. Schmidt (Zeits, für Augenh., April 1902), had a patient in whom hypopyon and panophthalmitis appeared thirty-six hours after operation. He opened the anterior chamber, cleaned out the pus, introduced iodoform discs and closed the wound. Improvement was rapid and in a month the patient had vision of one-fourth. Ellet, (Jour. Amer. Med. Asso., Aug. 3, 1903,) recommends rods made of gelatin containing 50% of iodoform. "The substances are mixed hot and poured into a clean tin plate to harden. The resulting film is then cut into the required size. Their introduction into the anterior chamber presents no difficulties." pheral incision into the cornea is made and the rod caught at one end with fine forceps and pushed into the eve." way reports two cases in de Schweinitz's service in which the rods containing 70 % iodoform presumably prevented loss of the eyeball from panophthalmitis following infecting injuries. The use of iodoform seems to be growing in popularity both in Germany and America. The rods are undoubtedly valuable, occasionally saving some vision, often saving the ball and if. as Ostwalt and Shumwav suggest, this treatment was combined with electric cauterization, the results might be still better

The injection of other substances than iodoform has received little attention. White says that some authors do not hesitate to inject into the anterior chamber 1-1,000 bichlorid just as they inject it under the conjunctiva in these cases and mentions that Pflueger, Abadie, Darier and Deutchmann claim great things for this method.

My experience is confined to a single case but its effect was so prompt and satisfactory that I would feel no hesitation in trying it again at the first opportunity. The patient was an anemic man of 77 years, very feeble and old for his years. Two days after combined extraction the conjunctival sac contained ous and the corneal wound was infected. washings of the sac with bichlorid 1-1.000, and the cauterization of the wound with carbolic acid, resulted in union of the wound-edges and reduction of the conjunctival discharge. The treatment was continued until the fifth day when a light cloudy mass was observed in the pupil protruding into the anterior chamber and rapidly increasing in size. I felt that unless something radical was done the eye must be enucleated. Since the wound had closed and jodoform rods could not be introduced without reopening it. I injected into the anterior chamber directly into the mass 5 minims of bichlorid In two days the mass had disappeared, the inflammation commenced to subside, and in ten days more the patient left the hospital with useful vision in that eve.

The constitutional treatment in all these cases should be stimulating and supporting.

ALTERATIONS FOLLOWING EXTIRPATION OF THE SUPERIOR CERVICAL SYMPATHETIC GANGLION.

By ELVIDIO GASPARRINI, M. D.,

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TRANSLATED FROM THE ITALIAN BY DR. ACHILLE VITERBI, OPH-THALMOLOGICAL LIBERUS DOCENS OF THE SIENA UNIVERSITY, TORINO, ITALY.

When Abadie issued his sympathetical hypothesis on glaucoma, and Ionnesco suggested the superior cervical sympathetic ganglion extirpation, attention was called to the functions that may be exercised by the sympathetic system. Of ophthalmological pathology, and many other diseases, very little was known in their anatomical substratum. Wishing to remain within the limits of an ophthalmological article. I only remember that the superior cervical ganglion mono, and bilateral extirpation and cutting have been suggested and applied in epilepsy and in exophthalmic goitre, but the results were not satisfying. But attention was so called to the physiological influences of the sympathetic system on the eve. In Italy Professor Angelucci 1 and his assistant, Professor Lodato², worked very much on the subject, studying the influence of the sympathetic system on ocular physiology. Professor Albertotti³ also occupied himself about this, but it appears from his clinical histories that he was not very well satisfied with his results.

Abroad, many an author occupied himself with the said question (sympathectomy in glaucoma) and a great many patients were so treated, but the problem is not solved, and we have yet a large number of pro and contra views.

I think this does not depend on the fact of the very dangerous disease, which is often incurable, but from our very little knowledge of the sympathetic system: this system is very important in our physiology, may be more than we think; therefore we have no perfectly granted fact for the explanation of many phenomena. As for the phenomena following the extirpation of a ganglion, up-to-date experimenters found

they were the same well-known to their predecessors, and they may be read in every physiological treatise; but as for the action on blood-vessels, Doyon observed a difference between the various kinds of animals; this action is a constriction of blood-vessels in the dog and an enlargement of the blood-vessels in the rabbit.

Arloing⁵ observed in the sympathectomized side a secretorial difficulty, the secretion of some glands being stopped and an hypersecretion of lacrimal and Meibomian glands taking place.

Morat and Doyon⁶ observed an increase in the crystalline lens curve and refrangibility ascribed by Lodato to a greater density in the aqueous humor.

But I do not think there is a greater refrangibility because in many animals never did I observe such an increase. Sometimes refrangibility seems greater when the animal fixes its eyes on an object not very far off, and an increase of two or three D. is really to be observed. But if you direct it to a far off object, refrangibility decreases. Such variations I observed also before extirpation, an evident mark of the non-influence of sympathectomy on the accommodation.

My observation agrees with Hess,⁷ Roemer and Othmar Dufour.⁸ Some after-sympathectomy phenomena decrease in due time: some increase, others arise. We put in the first class miosis, which, according to Floresco, is decreasing the sixth day after operation and quite disappeared after eight months or a year.

Some experimenters observed on the contrary a mydriasis on the operated side.

A diminution rapidly disappearing in the ocular tension of the sympathectomized side was also observed. According to Neuschüler⁹ it depends on an enlargement of blood-vessels.

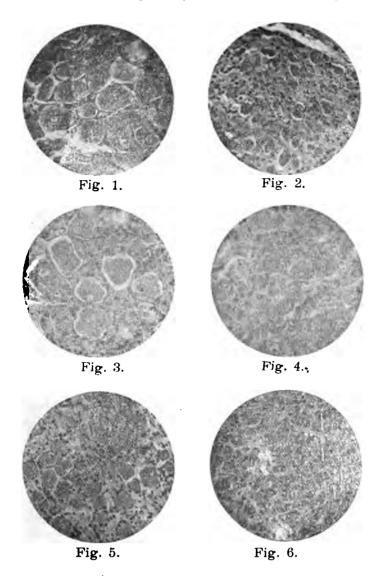
Between new phenomena Cl. Bernard¹⁰ observed a general growing thin, accompanied by infiltration and a particular eruption on all the surface of the body.

Brown-Sequard¹¹ observed, as others did, a corneal flattening and ulceration, a change in the iris-color, a purulent conjunctival secretion.

Brown-Sequard observed that general atrophy of the brain follows bilateral sympathectomy and a general but more marked atrophy of the brain on the operated side follows unilateral operation; the same results were obtained by Vulpian, who observed also a diminution in the weight of the eye of the operated side.

Angelucci observed the same diminution in a smaller degree.

Hertel,¹³ on the contrary, states that the bulbi of 31 rabbits killed at different times were quite normal; the involucra, twee and retina were perfectly normal as on the non-operated



side. Elinson¹⁴ observed degenerated fibres in the optic nerve of the operated side; this fact has been denied by Lodato, who states that black-colored fibres by the Marchi-Maggi method were to be found in the optic nerve of the nonoperated side. Lodato observed alterations in the nervous cells of the retina directly after ganglion extirpation; two months after the retina was quite in a normal state; the same phenomenon he observed in the ophthalmic ganglion; but Hertel on the rabbit found no alteration.

According to Lodato, Hertel examined the ganglia some time after operation, when the alterations of the nervous cells existed no more.

I will state that histological alterations were, according to my examinations, more clear some time after operation.

Beyne¹⁵ concluded his memoir, stating that alterations are very different because they are to be found in many organs and tissues (eye, brain, bony tissue, skin, etc.) with different shape (degeneration and necrosis of the anatomical elements, simple atrophy, sclerosis, hypertrophy). They appear to be very inconstant, because under the same experimental conditions they are only to be found sometimes.

Alterations following sympathectomy have been studied in man. Jonnesco and Floresco¹⁶ did not meet with trophic disturbations such as on the animals. These authors, as well as Jaboulay¹⁷ observed only the after-operation constant phenomena.

But Dejerine¹⁸ points to sympathectomy as the cause of facial asymmetry in an epileptic boy. Bellincontre¹⁰ observed a retinal detachment.

The sympathetic system has been studied also regarding the etiology of some diseases. Gallenga²⁰ in 1885 observed injury of the cervical sympathetic system on some boys affected by congenital hydrophthalmos, teeth deformations and disturbed movements of blood-vessels.

Lodato in two cases of glaucoma observed microscopical alterations (hemorrhage and sclerosis) in the cervical superior ganglion of the operated side.

Bull and Muller²¹ observed a constant sclerosis of the extirpated sympathetic ganglia in cases of glaucoma.

Before these authors De Giovanni²² published in 1876 his "Patologia del Simpatica," completed by many experiments, histological and clinical observations.

This book explains to the reader the great importance of the sympathetic system on life and it is a pity we have only so little anatomical and physiological knowledge on the subject.

My little bibliography concludes with the statement of Hartwig²³ about the necessity of the experiments on superior cervical ganglion extirpation and the effects of this operation

on the brain. This is the reason why I am now publishing the results of my experiments.

I call the attention of the reader to the fact that the authors consider two independent sympathetic systems and often one side was fixed as a test (the non-operated one—[optic nerve, ophthalmic ganglion, etc.]; therefore I may write here the sentence of De Giovanni: "Non havvi cioe che un solo sistema nervoso composto di varie parti delle quali non una procede dall'altra, quantunque tutte siano insieme collegate, cosiche l'azione dell'una influisca sull-azione dell'altra."*

On the beginning of my experiments I had the same opinion but now I do not consider it quite exact. It must be modified because the sympathetic system of one side influences the same of the other side; of course we have individual differences but I think they cannot change the results of my long and patient researches on rabbits, cats, dogs and monkeys.

I will publish here only quite established facts.

I began my experiments three years ago, as I was engaged in a study about the pathogenesis of sympathetic ophthalmia: my aim was to observe the influence of an injury of the sympathetic system on the passage of the affection from one eve I applied superior sympathectomy to different to the other. rabbits: some were kept as a test: others underwent an hypodermic injection after operation; same injection was done to other rabbits. After operation the normal phenomena developed: miosis, restriction of the palpebral fissure, slackening of the third evelid, internal deviation of the ocular globe, enlargement of the retinal blood-vessels. These phenomena appeared constantly, but their intensity changed; in some animals, after some time, the miosis and paralysis of the third evelid decreased; but recovery did not take place, at least before the animal was killed for histological researches.

My researches on the alterations of the eye of the sympathectomized side were provoked by the ophthalmological alterations observed in rabbits under the experiments about sympathetic ophthalmia. These alterations I had never before observed and I suspected that the extirpation of the superior cervical sympathetic ganglion had had some influence on the experiment. The optic nerve papilla of the sympathectomized side, after a month, suggested an atrophy; it was pale with few blood-yessels; never did I observe inflammation before and

^{&#}x27;There is only one nervous system composed of different parts one derived not from the other, although related in such a way that the action of one is reflected on the action of the other."

therefore it was not right to think that this atrophy would be the sequel of a neuritis. To be quite sure I observed sympathectomized rabbits taken as a test; I observed the same ophthalmological facts of the same degree and on both sides.

I had examined these rabbits only in the first day after sympathectomy to see what was the matter with the blood-vessels. I had observed the well-known facts; but after some time I only periodically studied what interested me by that time. was not able to find an explanation of these facts; but as an explanation was necessary, I thought that the sympathetic system must be the cause of some unknown phenomena of the circulation and tension of the eve. This explanation seemed to be good for the eye of the sympathectomized side, but it was not the same for the other side; though an influence on the other side was quite possible. But my hypothesis had no physiological base; therefore I followed the only possible way, that is the microscopical researches of the atrophy. two rabbits: one had been sympathectomized, the other was also injected with diphtheric toxin. This toxin I used in order to produce sympathetic ophthalmia. I fixed the four eves, with two others of a normal rabbit as a control, in Müller's fluid. Symmetrical parts of the optic nerves were treated with Marchi-Maggi liquid. After celloidin-imbedding I got some sections in parallel lines with the axis of the nerve in order to study the degenerate fibres. Such degeneration I observed in all the nerves of the right eve; of course no fibre was colored in the nerves of the eyes kept as a control.

As the rabbit was not the best kind of animal for my researches, because it is possible to find some black-colored fibres in common rabbits, I thought to experiment on cats and dogs to avoid this cause of mistake.

On the cats I had the same results, but though they were old animals, aseptically operated under ether narcosis, they died in 25 to 30 days. Then I got some large dogs. On cats I had the same results as on rabbits. After 10 to 15 days it was possible to observe zones of alopecia on the operated ear, on the head and the spine, always on the operated side. Then arose marasmus and the cats died through a general and rapidly wasting distrophy. Paralytical posterior and anterior phenomena were constantly to be observed.

I do not write here the results of many historical researches on the cats because my conclusions have as a basis the experiments on the dogs and on a monkey.

Two of my dogs were killed the fifteenth day after operation; two the twentieth day; one the thirtieth day; one the

fortieth day; others when they were quite near to death. Of course. I had the operation done under the aseptic rules, and I completely isolated the superior cervical ganglion without any injury to the vagus which is well connected with the sympathetic nerve. They only separate about 1/2 centimeter before the inferior end of the ganglion. Therefore, when I reached the ganglion I cautiously isolated the lowest end of the ganglion until I was near the place where it is connected with the vagus. I then sectioned it and I proceeded to isolate it near the skull. I aimed to cut it as high as possible and to cut out all the roots (communications) which tie it to the spinal marrow. Operating very cautiously, and after two trial operations, quite apart from my present work, I succeeded in extirpating the ganglion completely. In order to be sure of having totally extirpated the ganglion I fixed it in Heidenhein sublimate and got it examined microscopically.

I do not mention the results obtained on some dogs, because I will wait for a greater number of observations in order to get at well-established conclusions. They were killed and their optic nerves examined by the Marchi-Algeri method; the ciliary nerves and ocular globes generally were examined, too.

But I will only write here the results obtained by histological examinations on dogs which spontaneously died or were killed a long time after sympathectomy.

The first aim of my researches was to see if extirpation of the superior cervical ganglion was followed by atrophical alterations in the optic and ciliary nerves of both sides. Therefore I killed my dogs quite early. The Marchi-Algeri method is very good to study beginning degenerative alterations, and I aimed to establish at what time degeneration started. Of course, to be quite certain of results got by this method, it must be applied various times with control tests. So I did, but I have yet some doubt on the degeneration of the optic and ciliary nerves, though I am quite inclined to admit their existence. I will keep this part of my researches as the basis for new studies.

In my first experiments I did not look for other alterations of the sympathetic system; but I conserved not only the eye but the optic nerve and the brain with a part of the cervical marrow.

To have control against the Marchi-Algeri method, I thought of keeping alive my dogs for a long time and of using Weigert's method; but important phenomena were immediately observed. Then I aimed to see if they depended upon the

extirpation of a cervical superior ganglion and if in my dogs some alteration in the ganglia of the other side was to be observed.

In this new field I started with my researches.

I took the omonymous ganglion. I fixed it as the extirpated one and I examined both at the same time in order to have a control. I have found such clear and constant alterations that I decided to publish them; on this side the problem is quite solved. As for the others, I am waiting for new results.

Here are, meanwhile, the results of my experiments as they are noted in my booklet:

to the poor

February 21. Big bastard dog. Left superior cervical ganglion is quite completely extirpated. After operation the left pupil is very small; right pupil in normal condition. Left palpebral fissure of smaller size than right one. The ganglion is fixed in sublimate.

February 22. The dog has no general phenomena; left pupil small; right one is normal.

February 24. Left pupil small, nearly immobile to the light; a little subconjunctival edema, a small palpebral fissure, paralysis of the third eye-lid, the globe quite evidently turned to the right; retinal blood-vessels enlarged in the left eye, normal in the right one.

March 16. O. S. Papilla of the optic nerve is pale, veins a little enlarged, arteries narrow. O. D. Constriction of the arterial vessels of the papilla.

March 27. Left papilla of the optic nerve is paler with indistinct edges and narrow veins. Right papilla as before.

Dog is killed by a gas-embolus. Right superior cervical ganglion is fixed in sublimate; the brain, bulb, eyes and optic nerve in Mueller's fluid.

I get some five-micromillimetered sections of the superior cervical ganglia included in paraffin and color them by different ways: hemalaun, hemalaun-eosin, thinonin (Nissl method).

I will not describe my observations on the ciliary and optic nerves, etc., but at a comparative examination of the ganglia I observed an evident difference between the cells of the left and of the right one.

I do not speak of the condition of the cells of the left ganglion, kept as a control. The cells of the right one are a third smaller and wrinkled; their nucleus is displaced, and has lost a part of the chromatic substance. These cells are more constricted (crammed) owing to the growth of the interstitial connective tissue.

VII. DOG.

April 17. Black little bastard dog. The left superior cervical ganglion is extirpated; well marked miosis; palpebral fissure is narrowed; deviation of the globe and paralysis of the third eyelid are to be observed only on the fourth day. Enlargement of the blood-vessels of the left papilla is to be observed the day after operation.

April 30. Left pupil very small; very little movement of the same to the light; the palpebral fissure is smaller; deviation of the globe and paralysis of the third eyelid remain. Nothing to be noted in the right eye. Atropin is injected; after thirty minutes right pupil is perfectly enlarged; left one gets to its greatest enlargement after an hour and a half.

May 9. Left pupil becomes punctiform; right one is a little enlarged.

May 19. We inject eserin, and after 20 minutes left pupil is very small; right one is normal. After 30 minutes left pupil is punctiform: right one begins to grow smaller. After 2 hours right pupil begins to enlarge, left one remains punctiform.

May 26. Left pupil is a little smaller and less reactive to the light. At the opthalmoscopical examination I observe the signs of incipient atrophy, particularly in the left eye. The dog is killed. The right superior ganglion is fixed in sublimate and examined with the left omonymous one. Here also is to be found an evident alteration of the cells, which appear to be smaller and crammed with connective tissue. It is the same process as in the sixth dog.

After this dog was killed I knew a fact that persuaded me that we must wait for very remote results before giving an opinion on the influence of the sympathetic system on the mechanics of life. A dog, which had been operated in the first days of December, escaped to its home and died with strange symptoms. I am not describing them such as they were described to me by the person who was present at the death of the dog, because analagous facts I have seen and here describe in the following experiment.

VIII. DOG.

- April 17. Big bastard bitch. Left superior cervical ganglion is extirpated and fixed in sublimate. After the operation strong miosis, restriction of the palpebral fissue, internal deviation of the eye.
- April 20. O. S. Same phenomena. Paralysis of the third eyelid and enlargement of the blood-vessels of the papilla.
- May 5. Greater restriction of the palpebral fissure; deviation the same; left pupil miotic, not mobile to light; right one normal. We inject atropin, and after 20 minutes right pupil begins to enlarge, left one does not; after one hour right pupil is completely enlarged, left one is beginning; after 2 hours it is not yet completely enlarged.
- May 6. In the morning both pupils are equally and completely enlarged.
- May 10. Left pupil grows smaller; right one as before. May 12. Left pupil is as before atropinization; right one always enlarged.
- May 25. Eserin, quite the contrary of atropin, works more rapidly and energetically on left eye; after 25 minutes left pupil is punctiform; right one grows smaller only after 30 minutes and never as small as the left one. After 2 hours right pupil grows larger, left one stands as it was; after 3 hours right pupil is normal, left one not yet normal.
- June 7. Left pupil very small, right one as before. At the opthalmoscopic observation right ocular fundus shows slight alterations; pale papilla in the right fundus.
- June 17. Right pupil much smaller and less mobile to the light. The action of the miotic and mydriatic substances is not very different on both eyes. Eserin instillation; after 20 minutes left pupil grows smaller; after 30 minutes the same in the right one; after 50 minutes both pupils are small; after 2 hours they begin to grow large. Then atropin is instilled; after 5 minutes both pupils are punctiform; after 15 minutes they grow larger; after 20 minutes the left one is larger than right one; after 40 minutes enlargment is complete on both sides.
- June 21. Right pupil is smaller than the left one. When the pupils were perfectly enlarged I repeated opthalmoscopical examination. Left arteries very small, veins a little more enlarged; pale papilla with pigment alterations; darker color near papilla so as to partially conceal the reflection of the tapetum; clearer on the edges. In the right eye I have observed the same facts.

July 4. In strong light pupils are equally contracted; in a dim light left one is smaller.

July 9. In these last days new phenomena took place; the dog is getting lean and losing appetite; now when it is free it walks very slowly; it stops, is tottering and it seems to be falling, but after some time it keeps right.

July 10. This morning the dog is worse; it remains in its kennel; pulled out it takes a few steps, totters and falls down, now on one side, now on the other; generally on the left side. It falls with its posterior legs. When fallen it remains on the ground until it is aided; then walks a little and falls down. Visible mucous membranes are very pale; the hair loses its color.

July 11. The dog remained in its kennel all the night; it can't walk. I observe both pupils round and small, not reactive to light. We instill atropin 1 per cent, and only after 3 hours both pupils are equally and completely enlarged. To the opthalmoscopic examination the papillae show a grey-blue color; blood-vessels are not to be seen. The edge around the papilla is darker. Blood examination: red corpuscles 2,500,000, white ones 4,500, hemoglobin 10 per cent. As the animal is near to death we cut the blood-vessels of the neck, and from the carotid comes a little quantity of discolored blood. Brain is quite anemic. Thoracic and abdominal organs are quite anemic, too; kidneys are like the great white kidney. I note signs of fatty degeneration of the liver; left inferior lobus is asphytic.

Right superior ganglion is fixed in sublimate, included in paraffin and examined with the left one.

Right ganglion is greatly altered by the same pathological process as in the precedent dog. Microphotographs 1 and 2 of the same enlargement show the enormous difference between the two ganglia.

IX. DOG.

July 17. Extirpation of left superior ganglion of a big bastard dog. We succeed quite well in the operation; we note the same instant the dog is untied from the apparatus that left pupil is very small; so is the palpebral fissure; third eyelid covers one-third (the inferior one) of the cornea. The extirpated ganglion is fixed with sublimate.

July 19. We have now an internal deviation of the eyeball. July 23. Nothing new; atropin 1 per cent is instilled; both

pupils grow equally large; but the left one is slower in its enlargement.

July 24. Left pupil grows small; right one always enlarged.

August 1. Left pupil is small, reacting little to light; right one is normally enlarged and reactive. Eserin ½ per cent. is instilled; after 30 minutes left pupil is punctiform, right one grows smaller; after an hour both are equally small. After 2 hours right one grows larger and after 3 hours left one too.

August 2. In the morning both pupils are as before eserin instillation; atropin 1 per cent. is instilled and both pupils are equally enlarged.

August 5. The pupils have nearly the same diameter; left change.

August 7. Right one grows small, too.

August 10. The pupils have nearly the same diameter; left one is not reacting to light; right one is slowly reacting.

August 15. Right pupil is a little smaller than commonly and third eyelid is more visible; it reaches to the limbus. Ophthalmoscopic examination: arteries small and veins enlarged in right and left eye. They react the same when eserin ½ per cent. is instilled.

August 24. Dog is depressed; yesterday was quick, now is lazy; is tottering but keeps on its legs; this is quite evident when it comes down the stairs; it is more sure when it is going up.

August 25. More evident are the paralytic phenomena; dog is not able to come down the stairs. Right pupil is as small as left one, not reacting to light. Small palpebral fissure; third eyelid covers inferior part of the cornea; right eyeball shows internal deviation. Palpebral and bulbar conjunctiva are anemic; so is the mucous membrane of the mouth; the nose is dry. Blood examination: red corpuscles 3,700,000, white ones 5,350, hemoglobin 10 per cent.

Ophthalmoscopical examination: pale papillae; very small arteries, small veins.

August 28. Dog is continually falling down; it is of half its initial weight. It is killed; femoral artery is cut; a small quantity of discolored blood comes, as if the femoral vein was severed. Liver, kidneys, spleen, lungs, heart are anemic.

Right superior ganglion is fixed with sublimate: same anatomo-pathological results as described before.

I. MONKEY. (CERCOPITHECUS.)

May 17. Extirpation of left superior cervical ganglion.

Directly after operation I observed miosis of left pupil, ptosis of the superior evelid, and internal deviation of the eveball.

May 18. Light edema of the neck; palpebral fissure is small

May 19. Nothing changed; atropin ½ per cent. is instilled and after 15 minutes right pupil is perfectly enlarged, left one grows large. During the observation left pupil never enlarged as much as the right one and grows small before right one. Ophthalmoscopic examination is negative.

May 24. Enlarged blood-vessels of the papilla; right papilla is normal.

May 25. Eserin $\frac{1}{2}$ per cent.; after 15 minutes left pupil is totally restricted; right one after 40 minutes, but is not punctiform. After 4 hours all is normal in right pupil, not in left one.

May 29. Atropin. After 5 minutes right pupil grows large; after 7 minutes left one, too; after 15 minutes both are equally enlarged and left palpebral fissure is like right one. Ophthalmoscopic examination: blood-vessels enlarged only in left eye.

May 31. Left palpebral fissure is smaller than right one; left pupil grows small, too; right one remains enlarged.

June 4. Left pupil is reacting to light; same is true of the right one, but it is slower. Left papilla's blood-vessels are enlarged; likewise the right one's.

June 9. Eserin ½ per cent; after 15 minutes left pupil is punctiform; right one is at maximum of restriction after 40 minutes; the action vanishes in left eye earlier than in right one.

July 4. Left pupil is smaller than right one; pilocarpin 2 per cent; after 10 minutes both pupils grow small; after half an hour both are punctiform. Then they begin to grow large at the same time.

July 19. Pupils of same size, slowly reacting to light; palpebral fissures of same size. Equally reacting to eserin and atropin. Ophthalmoscopic examination: optic papillae are pale with thin arteries. These facts are more evident in the left eve.

September 1. Monkey is slower, is not hungry, grows lean; but paralytical phenomena are not to be observed. Externally both eyes are equal; same diameter of pupils, same reaction to light. Bulbar conjunctiva and mucous membrane of mouth are anemic.

October 2. General depression. Animal grows lean; walks very little but co-ordinately and never falls down. Mucous

membranes are pale, optic papillae are anemic with arteries scarcely visible. Blood examination: red corpuscles 4,025,-000, white ones 4,500, hemoglobin 20 per cent.

Both eyes reacting to atropin and eserin.

October 12. Paralytical phenomena began three or four days ago, same as in dogs. Since vesterday the monkey is continually nestled, does not eat. Has been kept in a hot room with woolen clothes, but it is quite in the pre-agonical period. Mucous membranes are very pale, papilla bloodvessels are invisible; left pupil is a little smaller than right one; both not reacting to light. Palpebral fissures are of same size.

Monkey is killed with chloroform; both pupils are enlarged; but left one remains smaller. Autopsy: Edema of the abdominal cavity; liver, kidneys, spleen, lungs and heart are anemic. Right superior cervical ganglion is fixed in sublimate and is included in paraffin and histologically examined.

I observe the same well-marked alterations as in dogs; but in the monkey the cells are less decreased. The alterations are of the same anatomo-pathological nature; therefore from the same cause follows the same effect. We have only a difference about the degree of alterations; they are more marked when the operation had been made long before or had stronger effects.

If you compare microphotographs 2 and 4 you observe the same alterations. No. 2 is from VIII dog that lived about 3 months; No. 4 is from IX dog that lived only 40 days.

Both these animals had general phenomena. They grew lean and paralytical, and the red corpuscles were destroyed; in fact they were 3 to 4 millions, though generally there are 7 to 9. Great decreasing of hemoglobin, that was 10 per cent.

It would have been useful to examine the blood before the operation, but notwithstanding this, we are quite certain that this decrease was due to sympathectomy.

The microphotograph signed 6 is from the right superior ganglion of the monkey; the cell body is not so much decreased, though the animal lived 3 months, but well-marked alterations are to be found.

All preparations show the same facts.

A typical case is that of the VIII dog (illustration No. 2); connective intracellular tissue is very much increased and so are the endothelial cells which surround the nerve-cell. They do not stand in the same place as before, but are scattered through connective cells. Therefore the nervous cells are compressed. Some new-formed blood-vessels are to be found

as in the VI dog. Nerve-cells are not only decreased in size, but are strongly changed in their structure; the nucleus has disappeared or is smaller, and the chromatic substance has vanished nearly totally. This fact is to be observed particularly in the monkey.

The protoplasmatic substance is modified, too; it is granular no more, is displaced in a part of the cell and the nucleus is pulled off peripherally (to the edge). The Nissl method gave us beautiful karvokinetic figures.

Concluding, I think I may state a sclerosis of the right cervical ganglion exists.

It was impossible to study the initial stages. I will endeavor to demonstrate the alterations of other sympathetic ganglia, ophthalmic ganglia, optic and ciliary nerves, etc. I am now glad of having demonstrated said alterations.

Reading my results, and looking at my microphotographs, it may be concluded that important phenomena follow the extirpation of a superior cervical sympathetic ganglion.

I am glad of having demonstrated important alterations in the sympathetic ganglion of the other side.

This fact is a clear proof that both sympathetic systems are connected so that an injury on one side is followed by alterations of the other side, too.*

It would be logical to think of a vicariant (substituting) hypertrophy, but results were as here described.

I do not issue an hypothesis, nor do I pretend to tell which are the connections of the systems; future observers will give this explanation.

These connections are proved by miotic and mydriatic substances also. Directly after extirpation atropin is less active on the operated side; eserin is more active on the same side. After some time both eyes are equal, but it is to be observed that it is not the eye of the sympathectomized side which returns to the normal, but it is the other side which comes to the same conditions.

This research has been already conducted by Levinsohn²⁴. This author experimented on 6 monkeys and found that eserin and homatropin work less energetically on the operated side.

My opinion is the same as for the mydriatic substances, but not as for the miotic ones, because I constantly observed a greater action of eserin on the operated side; in fact, I observed this pupil growing smaller more rapidly and for a longer time.

Levinsohn examined his animals for some months (max-

^{*}Italics by the Editor.

imum 3) and observed a disappearance of the difference between the eyes. The same observations I also made, but he did not find a logical connection.

My experiments do not have an extraordinary importance, but I think they are such as to demonstrate that we want some good researches on the effects of sympathectomy.

Jonnesco and Floresco deny general phenomena after bilateral sympathectomy on men, but I think that it will be well to follow operated patients now scattered all through the world.

I have examined many times in the Siena lunatic asylum two epileptic young men (25 and 30 years, of age) on whom superior bilateral sympathectomy was performed. Both say they are worse than before. Of course, we cannot attribute the cerebral alterations to the operation, because it is impossible to exclude that they are a consequence of epilepsy.

Here are the results of my examination:

V=1. Contracted pupils, very slowly reacting to light. Good accommodation power. I always noted a concentric restriction of the white and colored fields of vision. This restriction does not exist in ten patients affected by the same disease for a longer time.

Ophthalmoscopic examination showed that the papillae were clearer than normally, (patients had black hair), with normal veins and thin arteries nearly disappearing at the edge of the papilla.

I experimented with mydriatic and miotic substances, but no difference of action was ascertained, since a control was wanting because we do not know after what time eserin and atropin work.

Restriction of the visual field and pale papillae are a consequence of sympathectomy.

In conclusion, my preparations (slides) were seen by many of my colleagues in Siena, who confirmed the alterations of the sympathetic ganglion. I was honored in being requested to bring my preparations to Rome, where they were seen by Professors Marchiafana and Dionisi; therefore no doubt may exist about the interpretation of the same.

EXPLANATION OF ILLUSTRATIONS.

- 1. Microphotograph of the left superior cervical ganglion of VIII dog (normal).
- 2. Microphotograph of the right superior cervical of VIII dog (pathological).

- 3. Microphotograph of the left superior cervical ganglion of IX dog (normal).
- 4. Microphotograph of the right superior cervical ganglion of IX dog (pathological).
- 5. Microphotograph of the left superior cervical ganglion of the monkey (normal).
- 6. Microphotograph of the right superior cervical ganglion of the monkey (pathological).
- N. B.—Right and left microphotos of each animal have been made to the same size of enlargement.

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THE CONSTITUTIONAL ASPECT OF SYMPATHETIC OPHTHALMIA

By CARL SCHULIN, M. D.,

BILLINGS, MONTANA.

There are two theories of the pathology of sympathetic ophthalmia. One of them, whose chief advocate is Schmidt-Rimpler, is that the inflammation is transmitted from one eye to the other by reflex action of the ciliary nerves. The other. whose originator is Deutschmann, says the transmission is caused by a spreading of cocci in the lymphatic space around the optic nerves through the chiasm from one eye to the other. He succeeded in producing sympathetic ophthalmia in rabbits by injecting a pure culture of staphyloccus aureus into the vitreous body of one eve. His theory found more adherents than the other. It failed, however, to receive general recognition Several observers did not succeed in corroborating Deutschmann's observations and certain well established facts in the pathology of sympathetic ophthalmia oppose his theory. Panophthalmitis, for instance, which is doubtless caused by cocci, leads very rarely to sympathetic complications. authors have said that, while there is a great deal of truth in Deutschmann's theory, there is somewhere a link missing. It calls for an explanation why the cocci spread in so many, still not in the majority, of cases. This missing link, in my judgment, unveiled itself through the contrast between two in many regards very similar cases.

About two years ago two little boys of about four years were brought to my office. Both had ruined their left eye in exactly the same manner, namely by running a scissor-blade into it.

One of the little boys came to me about one hour after the accident. There was a perforating wound of the cornea about one-eighth of an inch long, through which the iris prolapsed. The wound was located about one-twelfth of an inch from the inner margin of the cornea. After carefully washing the eye with boracic acid solution, I clipped off the prolapsed piece of iris with scissors under local anesthesia. After instillation of

atropia a compression bandage was applied, which was changed twice a day. The wound healed without any inflammation. Traumatic cataract developed rapidly and showed a peculiar brownish discoloration. The scar from the wound protruded a little. This, however, soon went back under compression and about four weeks after the injury the eye had regained its natural shape. The pupil was somewhat distorted by an anterior synechia and looked nearly black, from the discoloration of the cataract. It was not possible to illuminate the back-ground of the eye. Everything inside looked dark without any red reflex. The most unfavorable symptom was the total absence of vision or even any perception of light. On account of the youth of the patient, however, we still hoped he might be mistaken in this regard.

About two weeks later the other little boy came. He had his eye injured about the same time and in the same manner. as the other. The scissor-blade came from above, while he was looking down. It perforated the upper lid and entered the eveball about half way between the margin of the cornea and the equator of the globe. Cornea and lens were uninjured. He received no treatment whatever. His parents live far out in the mountains and the location of the wound made them believe that only the lid, not the eve itself, had been injured. Only after the wound in the lid had healed, they came to me to find out whether the boy was really blind in the left eve, as he claimed to be. The eveball was somewhat shrunk and quite soft. There was a good deal of pericorneal injection with large radiating bloodyessels. Cornea and lens were clear and behind the lens there was a felt-like, vellowish mass with streaks of blood, apparently an encapsulated abscess in the posterior chamber

The other little boy was sent for and I demonstrated to the parents the difference in the appearance of such an eve in case it receives treatment and in case it does not. Besides, I told them that, if an eye remains inflamed after such an injury, it is a constant danger to the other one. I said the right eye of the first boy was now pretty safe. This one, however, was in great danger from being infected by the injured eye and, therefore, as the latter was absolutely blind, it should be removed.

Never in my life was I deceived in a worse manner than in the prognosis which I gave on that day to the right eye of these children. The father of the boy whose eye I wanted to remove left town on the next train and took the boy back to the mountains without any treatment. According to my latest information the left eye is still inflamed and the right is as good as eyer.

Still worse I fared with the other boy. Not more than a week after that ominous consultation his mother told me that she thought that sometimes he could not see quite well. On examination it was found that the pupil of the right eye did not react on light. It could not even be dilated with atropin. With the ophthalmoscope the fundus oculi appeared dark and smoky. There was not even a red reflex from the retina and nothing could be seen of the disk. The vision seemed to be pretty good. The little fellow recognized from a distance of five feet a small lemon-drop and the stopper of a half-ounce bottle and moved around apparently unimpeded by want of sight. Only sometimes the vision was impaired, according to the statement of the mother. As it goes under such circumstances. I lost control of the case and the whole family soon went East. According to my latest report the boy's eye is now in a bad condition.

This double disappointment set me to thinking, and I believe I found the solution of the puzzle in the different constitutions of the boys. The first one was an anemic scrofulous city-child with enlarged tonsils and cervical glands; the other one was a sturdy and absolutely healthy mountaineer boy. Accordingly the course of the inflammation was in the first case asthenic and in the latter sthenic. This gives the disease its constitutional aspect.

The words "sthenic" and "asthenic" are more than two thousand years old. Their meaning is "respectively, with, and without force," and the force referred to is the vital force, or the vitality. The latter time-honored word came recently somewhat into discredit through the modern development of the Medical Sciences on a more exact foundation. Voices became loud in favor of abolition of the old word which was called mystic, metaphysical, or transcendental.

Prof. Halliburton of King's College, London, for instance, in a presidential address to the Physiological Section at the Belfast meeting of the British Association for the Advancement of Science, 1902. "On the present position of chemical physiology," says: "The revival of the vitalistic conception in physiological work appears to me a retrograde step. It may be that there is a special force in living things that distinguishes them from the inorganic world. If this is so, the laws that regulate this force must be discovered and measured, and I have no doubt that those laws when discovered will be found to be as immutable and regular as the force of gravitation."

Halliburton was not aware that through the indefatigable work of Prof. Alexander von Poehl, of the Imperial University of St. Petersburg, the chemical principle of the vital force had already been discovered and laid before the world in one of the most remarkable books ever written, namely Poehl's Sper-Theory, 1898. As in the case of all great discoveries, the world is slow in accepting Poehl's bold and entirely novel views. In Germany especially, he had the misfortune that, through the fault of no lesser men than the well known chemist. Merck and the noted clinician. Fuerbringer, he was denied the proper recognition. In consequence of defects in their methods which Poehl fully exposed, they failed to find the spermin anywhere else but in the prostatic glands. Still, he found advocates, besides in Russia, especially in France, in such men as Armand Gautier. Bouchard and others: also recently in Germany in no less a man than Prof. Senator of Berlin. this country Poehl's spermin theory seems to have attracted the attention of a only a few German-American physicians, including myself, who on reading it became what in Germany they sneeringly call a spermin-enthusiast. Some of you probably have read my article on Vitality and Immunity in which some of Poehl's views are exposed and extended into the field of pathology, especially bacteriology. A second and much enlarged edition of the Spermin Theory forms a part of the "Rational Organotherapy" which Poehl wrote together with Prince Tarchanoff and Dr. Wachs. At the request of Prof. von Poehl I have made an English translation of this work.

To put it into a nutshell the spermin, according to Poehl. is a ferment promoting oxidation and thereby maintaining life under conditions and in places where it would otherwise soon be extinct. Life is extinguished by the accumulation of products of imperfect retrogressive metamorphosis of albumen. The more imperfect the metamorphosis, the more poisonous on the one side and the more colloid on the other and consequently the less readily soluble and diffusable are the products. The effects of the oxidation, which is promoted by the spermin, are therefore not limited to a diminution of the toxicity. They also produce a change in the physical nature of the compounds. The higher the oxidation, the less colloid and the more crystalloid are the compounds. Here Poehl discovered one of the most important biological laws. Crystalloid substances, as you know, when produced inside of a cell, will, by osmotic force, try to leave the cell, provided its membrane is permeable for them. In this manner, by oxidation, the cell is cleaned out in a mechanical way and a current is produced towards the lymphatic vessels by which the tissues are freed from the products of the metabolism and their accumulation is prevented.

The most deleterious product of imperfect retrogressive metamorphosis is lactic acid. Spermin and lactic acid are antagonistic in so far as, when spermin has the superiority, the lactic acid is destroyed by oxidation, and, in case the lactic acid is present in an overwhelming quantity, the spermin is paralyzed in its action and is finally precipitated in the form of insoluble phosphate, the phosphoric acid being taken by the lactic acid from the phosphate of soda which causes the alkalinity of the juices. Consequently, under the influence of spermin the alkalinity of the juices is maintained and after it was lowered, it is restored, while lactic acid, if not destroyed, of course, has the opposite effect.

Of the greatest importance is the relation of spermin and lactic acid to bacteria especially bacilli. Spermin is a bacteric cide, while lactic acid is not. Consequently, as long as spermin is abundant, the alkaline juices are protected against infection with bacteria. This constitutes immunity. When, however, spermin is scarce, the juices are acidulated by the lactic acid, which is a normal product of the metabolism. If the lactic acid in this way gains the superiority, the amount of spermin will be still more decreased and finally annihilated, and the immunity of the juices against bacteria will be suspended.

Spermin is a splitting product of that complicated albumen—the nuclein—which is a constituent of the nuclei, not of the protoplasma of the cells. All the tissues of the body contain it in quantities proportionate to the amount of nuclein they contain. Consequently the testicles contain the largest percentage of spermin and next to them come the hemotopoietic organs which are the greatest producers of spermin. It is set free by disintegration of leukocytes, by the so-called leukolysis.

The leukocytes stand in a peculiar electro-magnetic relation to the bacteria. They are attracted by cocci and repelled by bacilli. This is called positive, respectively negative, chemotaxis. Besides the bacteria, other substances have chemotactic force. The heavy metals, especially iron, have positive, while snake-venom, for instance, has negative chemotactic force.

The chemotactic force of the blood varies under different conditions of health and disease. This finds its expression in the number of leukocytes present (leukocytosis). We speak of hyperleukocytosis and hypoleukocytosis, respectively, in case an increase or a decrease of the number of the leukocytes in the blood is found.

When the blood has its proper chemotactic force; when the alkalinity of the blood and the juices is high and the supply of spermin is ample, then we say the body has a high vitality. When, however, the chemotactic force and the alkalinity of the blood and juices, as well as the supply of spermin, are low, we say the vitality of the individual is low.

Low vitality finds its expression in a decreased number and abnormal structure of the blood-corpuscles. In children this is the cause, as well as the consequence, of enlarged lymphatic glands and tonsils, and is named scrofulosis. By it the power of resistance of the body against infection is lowered. Scrofulous children are more susceptible to any infectious disease than healthy ones. This also applies, as we shall see, to sympathetic ophthalmia.

One of the above mentioned little boys was scrofulous and the other one was healthy. One of them had a low and the other a high vitality. This constitutional difference, in my opinion, caused the difference in the course of these two cases of a like injury to the eye.

When in a healthy body an abscess is formed after an injury. the leukocytes readily respond to the call of the intruded cocci. They surround the affected part and protect the body against its evil influences by building a wall of granulating tissue around it. In its center a mass of "pus bonum et laudabile" will develop with a strong inclination to find, by liquefying the tissues, an outlet at the place which offers the weakest resistance. You all know the smell of fresh pus. This smell is caused by the spermin which it contains from disintegrating leukocytes. Such pus has an alkaline reaction and a weak antiseptic power.

This, however, will soon change, if the abscess cannot find an outlet, as is very liable to be the case, if a small abscess develop inside of the sclero-corneal sac. Lactic acid will soon appear and place the spermin out of action. Putrefaction will set in and the spermin smell will give way to the sour smell of decomposing pus.

Although antagonistic in many regards the common cocci of inflammation and bacilli of putrefaction are nearly always found together. The quantitative proportion of the mixture ought to have some influence on the virulence of the infection. Between a pure infection with cocci and one with bacilli all shades of mixed infection in different proportions will occur and are liable to produce a very different course of the case Now, if you add to this all the shades of a different amount of vitality, you will see a long series of possibilities and will find

my two cases close to its opposite ends. My first case was one of almost pure bacillus infection in an organism with low vitality, and the other was one of almost pure coccus infection in an organism with high vitality. An absolutely pure infection with either bacilli or cocci probably never occurs. The constitution, however, has in an infected wound a purifying effect on the bacteria. In a healthy organism the cocci will attract many leukocytes which by the production of spermin will destroy the bacilli before the cocci, and in a weakened organism the bacilli will outlive the cocci.

Therefore an encapsulated abscess in the vitreous body of a healthy organism, like the second of my cases, will contain, so to say, aseptic pus. Besides, it will be surrounded by a strong wall of granulating tissue which will prevent re-absorption.

A traumatic infection of the vitreous body of a weakened organism like the first of my cases, will take quite a different course. The vitreous body with its mucous tissue has not much vitality anyhow, even in a healthy organism. In a tiny, scrofulous child it will be about as lifeless as the white of an egg. If a septic infection takes place in such a vitreous body, the chances for the formation of an abscess with a protecting wall are not good. Instead, putrefaction will set in.

The main characteristic of the course of the first of my cases was the absence of inflammation. The brown discoloration of the cataract was doubtless produced by blood-pigment from decomposing blood. The whole posterior chamber was probably one cess-pool filled with putrid liquid. Therefrom the total absence of vision. Also the sympathetic affection of the other eve was characterized by the absence of inflammation. The predominant feature was a plastic formation. The iris was adherent to the capsule of the lens and the haziness in the background of the eve was evidently also caused by newly formed connective tissue in the chorioid and the vitreous body. Baumgarten found that tubercle bacilli, when they come into contact with stationary connective tissue cells, produce an increase in the number of the nuclei and an imperfect division of the cellbody. Common bacilli of putrefaction, if not disturbed by spermin, seem to operate in a similar manner. There is apparently a closer relation between both than is generally assumed. In my opinion, which I have more thoroughly presented in other publications, tubercle bacilli are bacilli of putrefaction which underwent certain changes for the adaptation to living in the animal organism.

The first of my cases evidently was one of exceptionally pure

bacillus infection. It was certainly a rare case. When sympathetic ophthalmia sets in, the proportion of the bacilli to the cocci is always large, as appears from the well known fact that sympathetic iritis is the most plastic of all. In no other form of iritis is it so hard to combat the posterior synechiae, as in sympathetic iritis.

In my opinion a pure coccus infection in the vitreous body of a healthy organism will lead to panophthalmitis and will have no inclination to cause sympathetic ophthalmia. A mixed infection with equal parts of bacilli and cocci will produce in a healthy organism an encapsulated abscess in the vitreous body with a strong protecting wall. Even in this case there will not be very much danger to the other eye, as long as the vitality remains high. In a weak organism with low vitality. however, the wall of the abscess will be weak and consequently the danger from absorption of septic material is greater and the danger will grow so much the more, the lower the vitality and the higher the preponderancy of the bacilli over the cocci in the injured eve. When looking over the cases of sympathetic ophthalmia which came under your observation, you will doubtless find that they were not the healthiest but more or less scrofulous individuals.

Thus it appears that sympathetic ophthalmia is not, as Deutschmann thought, a simple coccus infection. It is a mixed infection with preponderancy of the bacilli in a weakened organism. The bacilli even play the first role for the characteristics of the disease, namely in the plastic formations which produce the most deleterious effects.

If the mixed infection and the constitutional aspect are recognized as leading factors in the pathology of sympathetic ophthalmia, the therapeutic measures to be adopted receive an entirely new and, in my judgment, a rational foundation.

As to the prophylaxis, the treatment of the primarily affected eye seems not to be of so great importance, as may be thought. When visiting the schools of many towns in Montana, several years ago, and testing the eyes of thousands of children in the interest of my research on errors of refraction and their relation to disease, I met quite a number of children with one of their eyes blind and shrunken from injury. Many of them said their injured eye had never received any treatment and the good eye, may be with exception of an occasional spell of weakness, had never given them any trouble. In opposition to them I remember quite a few scrofulous children and young adults who contracted sympathetic ophthalmia.

However, I do not remember one perfectly healthy individual that became afflicted with it.

When a child has a perforating wound of the eyeball, its constitution should be looked into. If the vitality is high, we need not be afraid for the other eye. When, however, the child is weakly, anemic and scrofulous; when there is little or no inflammation; and especially when the cataract has a brownish discoloration, then we must be on the lookout for sympathetic trouble. Our first object should then be to build up the constitution of the child. The greatest upbuilder is sunlight. Therefore such a child should not be confined in a dark room. The sun can do no harm. Give the child plenty of light, air, and food! And keep its bowels loose!

If the vision of the injured eye is entirely destroyed, or at least reduced to such an extent that it will never be worth while having it, enucleation should be recommended. In weakly children and young adults with low vitality its necessity should be emphasized to the utmost. In healthy individuals of any age it should also be suggested. There is always some danger from infection, even in the healthiest, and it is certainly not wise to retain so worthless and so easily removable a thing as a blind eye, if it endangers so valuable an origan as the now only eye. It is prudent, however, not to urge people too much. They often stick to such an eye with the greatest and most foolish stubbornness, probably caused by an abnormal mental condition from the worrying, and, if the other eye remains well, they are liable to blame the physician for having unnecessarily advised an operation just for a fee.

After the other eye has been affected, there seems to be no difference of opinion that the primarily affected eye should at once be removed, provided the sight is gone. Only in case the sympathetic inflammation is very severe, one might wait a little until the most acute stage is over. Enucleation, by the removal of the base of supply of the infection, sometimes works a great deal of good. In many cases, however, it has no effect whatever. Evidently the outcome depends on the quantity of the intruding germs and the proportion of the mixture of bacilli and cocci. The constitutional aspect doubtless also plays a role.

If the primarily affected eye has a fair amount of vision or if the patient stubbornly refuses to give it up, we must resort to treatment alone. This is in most cases quite an unsatisfactory task. The first remedy to think of, of course, is atropin. This, however, does not operate, because the synechiae are too strong. Next to it mostly everyone advises the free use of

blue ointment. With the same uniformity, however, everybody admits that it does no good at all. For the relief of the pain, which sometimes is very great, besides hot applications, morphin has been recommended. The hot applications are Morphin, however, is under these circumstances. in spite of the temporary relief it affords, just as harmful as it is in pneumonia or in meningitis. Cocci and bacilli leave the system through all the emunctories. Morphin checks the secretions and, in this way, interferes with the only chance of the intruded part to get rid of the intruders. Besides, morphin exercises a retarding influence on the metabolism generally and is prone to help the accumulation of products of imperfect oxidation in the tissues, especially in the vitreous body, and they in their turn will help the bacilli. Some coal tar products, as, for instance, acetanilid, phenacetin, etc., have the opposite effect. As Poehl has demonstrated, they promote the retrogressive metamorphosis of albumen by oxidation. By assisting in the destruction of certain compounds they counteract certain symptoms which are caused by them, especially pain. The analgesic action of the coal tar products is generally known. With large doses of them, combined with belladonna ointment, your patient will fare better than with morphin. The next thing to do is purging with vegetable remedies like podophyllin, irisin, phytolaccin, etc. The main features of the treatment, however, must be constitutional. Purging works constitutionally by promoting the excretion, the secretions, and the appetite. Next to this and food, air and light, come iron and some alkalies. Finally I beg leave to predict that the time will come when spermin will celebrate a triumph in sympathetic ophthalmia.

AN INJURY RESULTING IN CUTTING OF THE EXTERNAL RECTUS MUSCLE, AND PROBABLY LACERATION OF THE OPTIC NERVE.

By Frank Vinsonhaler, M. D.,

LITTLE ROCK, ARK.

P. E. S., white man aged 22 years, was struck in the right by the tip of an umbrella. The pain and shock were so that he fell to the ground, but did not become uncononited once. About thirty minutes later he became nauseated and once. One for examination. One hour after the injury he was brought He was still suffering pain. examination revealed a wound in the vertical direction about millimetres long and two millimetres from corneal margin just in front of the insertion of the external rectus muscle. There was already considerable chemosis about outer side of eveball. Ophthalmoscopic examination showed no evidences of injury to the internal eye, no hemorrhage or detachment, no change in the disc or vessels except in the inferior vein. which was increased somewhat in size and pulsating. tient stated that there was no perception of light. unable to see anything. The pupil was slightly dilated and reacted very feebly to light, consensual reaction being normal. Movements of the eve revealed the fact that the external rectus muscle was completely severed from the eyeball. mus hook was introduced through the wound and confirmed this, all fibres being completely cut. It was impossible to say how far toward the apex of the orbit the tip of the umbrella had penetrated. Introduction of a probe did not reveal anything satisfactory, although subsequent events showed penetration must have been much deeper than we suspected The lips of the wound were cleansed and an advancement of the muscle with the capsule and conjunctiva was made, and the muscle was reattached at a point approximating its original insertion. Both eyes were bandaged for six days. By this time healing was perfect and the stitches were removed. There was no iritis or cyclitis, no optic neuritis, nor at any time were there evidences of congestion or of

choked disc. Six weeks later: Motion of eve nearly perfect; about four degrees of internal strabismus. Vision: Fingers at five inches. Optic disc had assumed the picture of beginning atrophy. the vessels showing little if any change. but disc being distinctly pale and atrophic. Pupillary reaction much more marked by consensual than direct reaction. All symptoms pointed to injury of the bony structure at the entrance of optic nerve in the apex of orbit, or to direct laceration of the nerve by the point of the umbrella. cent literature. Dimmer reports a case of division of the internal rectus with point of a hook. Feier also reports the accidental division of the internal rectus by a saber cut. There is no case recorded recently that resembles one reported The section of the muscle was complete and that of the optic nerve must have been nearly so.

THE PRACTICAL APPLICATION AND THE RELA-TIVE VALUE OF THE TESTS USED IN EX-AMINING THE EYE MUSCLES.¹

By Alexander Duane, M. D.,

NEW YORK CITY.

The following remarks were addressed to an audience already thoroughly conversant with all that pertains to the examination of the eye. Under the circumstances to have have attempted any complete or systematic survey of the subject would have been superfluous and impertinent. I, therefore, simply tried to define what my own practice is and my reasons for it. And in doing this I naturally passed lightly over the methods with which all are familiar and the points upon which all are agreed, and, on the other hand, dwelt with special emphasis upon matters regarding which my procedures or my views might vary from those generally adopted. This will explain the somewhat sketchy and fragmentary character of the article and the apparently disproportionate stress laid upon certain features of the examination

Test Objects Employed.

As Dr. Randall pointed out, these must be such as to insure accurate fixation; hence, must be sharply defined, well separated from their surroundings, and just large enough to be distinctly visible.

Again, in some of the tests it is important to eliminate the element of projection. Hence, the test-object should be on or but little in advance of a large blank surface, serving as a background.

Furthermore, I think it important that an object used for testing imbalance should not consist of vertical or horizontal lines or of a figure bounded by such lines. When such an object is doubled, the patient's attention is called to two parallel lines and these he often unconsciously strives to unite or make con-

¹Read by invitation (with demonstration of methods on patients) before the Section on Ophthalmology of the College of Physicians of Philadelphia, November 15th, 1904.

tinuous with each other, thus involuntarily masking the deviation that is really present. This tendency to fusion is not as great with points and with round objects.

Fulfilling all requirements are:

- (a) A small, sharp, very bright light, set close to a large dead-black background.
- (b) A fairly large round target with a round bull's-eye—the latter being just large enough to be seen distinctly at the given distance.

Occasionally other test-objects are useful, as will be noted later on in describing the tests.

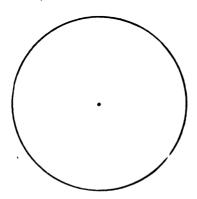


Fig. 1.—Target used for a Test-Object.

The target here shown is a disc of white cardboard, 5 inches in diameter, with a black dot 0.5 mm. in size in the center. This is the object used for the near tests, the target in this case being supplied with a handle to hold it by. For patients with low visual acuity targets are employed having bull's eyes 1 or even 2 mm. in diameter. For distance the same target is used but with a bull's eye of 5 mm., and the target itself is set in the center of a dead black disc, 1 to 2 feet in diameter.

Tests.

With regard to tests we must distinguish between those that enable us (a) to determine the position assumed by the eyes when at rest—the *Static Tests*; and (b) those that enable us to determine the ability of the eyes to perform the various normal movements—*Dynamic Tests*.

The tests that have been proposed are very numerous, but the following list comprises all that are necessary for even the most elaborate examination.

- A. Tests to determine position of eyes when at rest—Static Tests.
 - 1. Tests of Binocular Fixation. (Screen test.)
 - 2. Tests of Binocular Vision.
 - (a) Tests showing whether binocular vision is present or not (Red glass, Bar reading, Stereoscope, Amblyoscope, Hering's test.)
 - (b) Parallax test.
 - (c) Phorometer.
 - (d) Maddox rod.
 - (e) Clinometer.
- B. Test to determine ability of eyes to move—Dynamic Tests.
 - 1. Tests of Monocular Movement (Field of Monocular Fixation).
 - (a) Tropometer.
 - (b) Perimeter.
 - 2. Tests of Binocular Parallel Movement.
 - (a) Field of Binocular Fixation.
 - (b) Field of Binocular Single Vision.
 - 3. Tests of the Converging Power.
 - (a) The Static Tests (Screen, Parallax, Phorometer, Maddox) made for Near Points (showing the relation between the amount of imbalance for near and for distance).
 - (b) Convergence near-point.
 - (c) Prism-convergence (Adduction).
 - 1 Tests of the Diverging Power.
 - (a) Tests showing Relation between Imbalance for Distance and Near (see 3a).
 - (b) Prism-divergence (Abduction).
 - 5. Test of Supraverging Power (Ability to Overcome Prisms, base up or down).

that have been devised, we observe:

We require a test for binocular fixation; one, namely, that. apart from what the eyes see, will show whether the two fix accurately on the same object at the same time, or whether of this is afforded by:

The Screen Test: This I apply as follows: I place the patient with his head straight and with his eyes in the primary position and directed straight at the test-object (target). I then pass a card from one eye to the other, and, standing a

little to one side, notice whether either moves when covered (movement of deviation) or jumps back into place when uncovered (movement of redress). If any such movement is detected I proceed to place prisms before the eye, rapidly increasing these in strength until not only is the original movement abolished, but there is a slight movement in the contrary direction. I then reckon that by deducting 2° from the prism that thus produces the first perceptible contrary movement I obtain a close measure of the amount of the deviation.

Thus, if the eyes deviate out behind the screen, showing that there is either exophoria or exotropia, I keep putting prisms, base in, before one eye, until there is a slight movement inward behind the screen. If this takes place with a 10° prism, I shall generally find that with a 7°. 8°, and 9° prism there is no movement and that 8° represent quite accurately the true amount of the deviation. This finding will generally be correct to within 1°.

If there is no screen deviation to start with, we can generally say that there is no heterophoria greater than 1° or at most 2° . In such a case I take a 2° prism and place it before one eye, first, base in, and then, base out. If now the prism, base in, produces a slight, but perceptible movement in behind the screen, and the prism, base out, a similar movement out, I feel assured that there is orthophoria or, at all events, no heterophoria greater than $\frac{1}{2}^{\circ}$. If, however, it should take, say, 3° , base in, to produce a movement in behind the screen, and only 1° , base out, to produce a movement out, we would say that the test showed 1° of exophoria.

In cases of paralysis and often also in cases of squint it becomes important to determine the relative amount of the brimary and the secondary deviation. To do this, I first measure the screen deviation, in the way just outlined, with the prism placed before the right eve, and, then carefully keeping the the patient's head and eyes in the original position, I measure the deviation by a prism placed before the left eye. Thus in a given case with paresis of the right externus. I may find with the prism before the right eye an inward deviation of 10° in the primary position, 18° when the eyes are directed to the right, and 5° when the eyes are directed to the left. Placing the correcting prism before the left eye, I find the measurements to be 15° in the primary position, 40° with the eyes directed to the right, and 5° when they are directed to the left; i. e., when the patient looks to the left, the primary and secondary deviations are equal; when he looks straight ahead the secondary

is 1.5 times the primary; and when he looks to the right, the secondary is over twice as great as the primary.

Having made the screen-test in the way above mentioned by alternate covering, I then proceed to determine by it whether the deviation that we have found is a squint or a heterophoria.

To do this I make the patient look, with both eyes open, at the test-object, then suddenly place the screen before one eye, say the right, and then suddenly move it. If when I cover the right eye and again when I uncover it, that eye alone moves, showing that this eye deviates when covered but returns to fixation when uncovered, and that the other eye, which is uncovered all the time, remains in the position of fixation, I am evidently dealing with a case of heterophoria. If, under the same conditions, neither eye moves (and yet alternate covering has shown us that there is a well-marked deviation) the right eye is squinting. If both eyes move, the left eye is squinting.

By repeating the test several times first with one eye and then with the other, I can tell in a case of squint whether one eye squints constantly or sometimes one, sometimes the other deviates (alternating squint).

Proceeding now to (2) the tests of binocular vision, i. e., those which show, not so much whether the eyes deviate as whether both see the object in the same place or not, we may pass over (a) the tests (red glass, stereoscope, amblyoscope, bar-reading Hering's test), which determine whether binocular vision is present at all or not.

(b) Parallax. This is conducted simultaneously with the screen-test

As we are watching the patient's eye to ascertain how it deviates behind the screen, we ask the patient to tell how the object looked at moves, as the screen is transferred from eye to eye.

The recognition of this parallactic movement is really a recognition of diplopia; only, instead of the double images being seen simultaneously they are seen in succession. Thus, suppose the eyes deviate in when screened. Now when the screen is passed from the right eye to the left, the right eye, which is, so to speak, caught in the act of deviating inward, sees the object not straight ahead, as the left eye (which was fixing) saw it, but off to the right; i. e., the object appears to him to have made a jump from left to right. This condition, which is strictly analogous to homonymous diplopia, is properly called an homonymous parallax. So, too, if the right eye was turned out behind the screen, the object, when the right eye

is uncovered, would appear to move to the left (crossed parallax); if the right eye was higher the object would appear to move down (right parallax); if the right eye was lower, the object would appear to move up (left parallax).

Really the eye should be aware of a double jump of the object looked at, i. e., in homonymous parallax, the object. when the right eye is uncovered, should appear to jump first to the right and then back to the left (the latter movement corresponding to the movement of redress of the eye itself). Some few do, indeed, perceive this double jump, and occasionally we find some that see only the second movement, getting thus an inverse parallax which is just opposite in direction to the ordinary, or direct parallax. This should occasion no confusion.

Occasionally the parallactic movement is not perceived at all, and, not infrequently, even if it is perceived, the patient refuses to admit its existence until by the use of some artifice—the production, for instance, of an artificial parallax by means of prisms—its presence is forced upon his attention. Some few allege that the movement is always in one direction. But in the great majority of cases the test succeeds.

The parallactic movement is measured by means of prisms; in fact, we measure it when we are measuring the screen-deviation, the prism that corrects one in most instances serving to correct the other also. In the case of the parallax, the prism that just abolishes the movement measures the deviation. The test is a very delicate one, since, as can readily be proved by experiment, a prism of even ¼° can produce a well-marked parallactic movement, and deviations of this amount can readily be measured by the test.

In one respect the parallax is very valuable, because affording, better than any other subjective test a comparison between the relations of the eyes as regards binocular vision, on the one hand, and their relations as regards binocular fixation, on the other. I say it does so better than any other subjective test, because, unlike the others, it is made at the same time and under the same conditions as the test for binocular fixation (the screen-test). If then there is a discrepancy between the findings of the screen-test and the parallax—if, for example, the in-and-out jump of the eyes, which we observe, is corrected by a prism of 12°, while the parallactic movement of the object, that the patient perceives, is corrected by a prism of 4°—we can be sure that there is a real retinal incongruence of this amount, i. e., that the amount by which the eyes depart from binocular fixation is not identical with the amount by which

they depart from binocular vision. This could not be unhesitatingly predicated if we had found the same difference between the findings of the screen-test and phorometer; for as these two tests are made at different times and under somewhat different conditions, we could not be sure that the position of the eyes had not changed in the interval and that the discrepany between the tests was, therefore, only apparent.



Fig. 2.—The Black-Worth Amblyoscope Fitted with a Graduated Arc so as to Serve as a Phorometer.

The zero point of the arc is determined experimentally. The pictures in the two tubes being displaced vertically by means of the vertical adjustment screw, and the tubes being revolved until the pictures appear just over each other, the amount of deviation in degrees can be read off on the arc. The arc can also be used to measure the angle of squint and thus determine whether or not practice with the amblyoscope is causing the latter to diminish.

Another not inconsiderable advantage of both screen and parallax tests is that it enables us to measure the amount of vertical and lateral deviation simultaneously. We can thus sometimes ascertain how one modifies the other.

(c) Phorometer. I use the ordinary Stevens' phorometer and find it usually reliable, although at near points it sometimes

gives an excess of exophoria, particularly if too coarse a testobject is used.

The amblyoscope may be used as a phorometer, particularly if, as in Dr. Black's modification, it is fitted with a vertical movement, and if, as in the model here shown (see Fig. 2, it has a graduated arc, on which the amount of rotation required to put the two pictures vertically over each other can be read off directly.

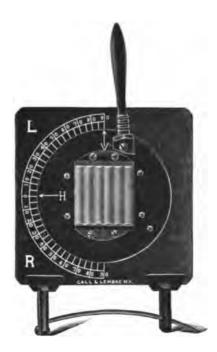


Fig. 3. Maddox-rod Clinometer.

The slide is placed on the cross-bar of a Steven's phorometer, which admits of being accurately leveled. Usually there is a pair of slides, one white for the right eye, the other red for the left.

- (d) The Maddox rod I use in the ordinary way. I find it usually gives an excess of esophoria (usually about 1° more than the other tests), so that if it shows esophoria, of 1°, I expect to find almost complete orthophoria by the parallax, screen, and phorometer. With some few the test fails altogether because of the strong tendency that they show to bring the line of light into the image of the flame, even when actually there is a very marked deviation present.
- (e) Determination of the Declination: This can be done either by Stevens' clinometer or by the Maddox-rod clino-

meter,* (see Fig. 3). With regard to this instrument let me say that though it is a model of my own, at least four people invented an entirely similar instrument a year or more before I did.

In general I think very little of clinical value is gained by the measurement of the declination except occasionally in complicated cases of paralysis. Otherwise, the disturbances of declination seem to me rare and when they do occur are to be regarded as simply pathological curiosities. I have never been able to persuade myself that except to a very insignificant degree they were productive of symptoms.

The Dynamic Tests: Turning now to the tests which measure the ability of the eyes to move, we come first to:

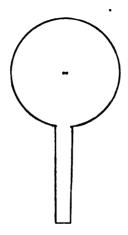


Fig. 4.—Test-object for Determining the Monocular Field of Fixation with the Perimeter.

This is a one-inch white disc with a small handle. In the center of the disc are two dots close together. If the patient fixes on these accurately, the dots appear separate, but if as the card is moved the patient fails to follow it, so that he no longer fixes the dots sharply, they will appear indistinct, and the two will run together and look like one.

1. Tests of Monocular Movement (determination of the Monocular Field of Fixation). This is made either with the tropometer or with the perimeter. The latter instrument is the one I myself use. I place the patient's chin in the perimeter

^{*}For this can be substituted an ordinary Maddox rod set in a trial frame and carefully leveled. The description of the original instrument is contained in the Phil. Med. Journ., June 8, 1901.

rest and adjust the head so that the eye under examination when in the primary position is looking directly at the zero of the arc. The other eye, of course, is covered. Then, keeping the patient's head perfectly immobile, I make him follow with his eye a small card, like the one I show here, with two dots on it set close together. (Fig. 4.) The moment his eye ceases to fix the double dot the two dots will seem to him to run into one, and the place occupied by the card on the perimeter arc will then indicate the limit of excursion of the eye in that special direction.

I place little reliance on this test (with either tropometer or perimeter), and for two reasons. In the first place, in making it we demand of the patient a maximum effort and one that it strains the eyes to perform. Sometimes the patient will make this effort, sometimes he will not. Hence, in the same patient we find a wide variation in our measurements and it is only by taking a series of measurements on different days and then taking the highest measurement of the series, that we can arrive at an idea of the true maximum capacity of the eye for movement.

Again, the test, even when it does show the full excursion of each eye, is sometimes delusive. It not infrequently happens that a patient, whose excursions as measured by the perimeter are apparently normal and are, moreover, equal in the two eyes, shows, when we examine the two eyes together, a marked diplopia increasing with some rapidity in a specific direction of the gaze. This finding, which I have met with several times, must mean that while one eye, if tested by itself, can make a maximum effort equal to that of the other, yet when it works with its fellow it lags behind the latter and does so because one of its muscles is at least relatively weak.

Nevertheless the test may be of service in differentiating some of those obscure cases in which we cannot certainly tell whether we are dealing with a paresis of a muscle in one eye or a spasm of the associate muscle in the other. Here if repeated tests with the perimeter showed that the excursion of one eye was always deficient in one direction and normal in others, we would infer paresis; while if they showed that the excursion of one eye was normal and that of the other eye was always excessive, we should infer the existence of spasm.

2. Tests of Binocular Movement: I determine (a) the Field of Binocular Fixation and (b) the Field of Binocular Single Vision simultaneously. I cover the patient's right eye with a red glass, and then standing in front of him and about three feet away, hold a candle or better a small electric light,

directly in line with his eyes. From this point, "the eyesfront" position, I carry the light first (1) to his left, and then successively (2) up and left, (3) up and right, (4) to the right, (5) down and right, and (6) down and left, skirting thus the whole periphery of his field of fixation and occupying in turn each one of what may be called the *cardinal positions*

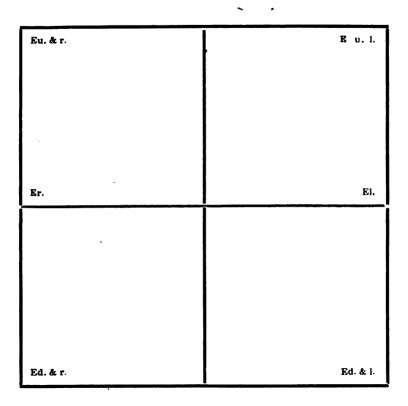


Fig. 5.—Six Cardinal Positions of the Field of Binocular Fixation and of the Field of Binocular Single Vision.

of the gaze (See Fig. 5). At each cardinal position (denoted in the chart by Er. Eu & r, etc.) I pause and ask the patient if he sees one light or two, what color the light is, where the red light is with relation to the white and how far off from the white. I thus determine the amount and kind of diplopia in each of the cardinal positions.

In making this examination it is almost a necessity to have some shorthand *method of recording*, for as the examination is very tiresome to the patient it must be done quickly and yet it is not always safe to trust to memory and wait until we get through before putting down our results.

I myself use the method of recording noted on the diagram. The six cardinal positions are Eu & r="Eyes up and right" (i. e., the position to reach which the patient's eyes must be directed up and to the right); Eu & l="Eyes up and left;" Er="Eyes right;" El="Eyes left;" Ed & r="Eyes down and right;" and Ed & l="Eyes down and left."

Furthermore, the following abbreviations are used:

DX=Crossed diplopia.

DH=Homonymous diplopia.

DR=Right diplopia (i. e., vertical diplopia with the image belonging to the right eye below.

DL=Left diplopia (i. e., vertical diplopia with the image belonging to the left eye below.

>> =increasing progressively and fast.

>> =diminishing progressively and fast.

Thus, Eu & r, DL >> (read "Eyes up and right, diplopia left increasing") would mean "There is a vertical diplopia with the image belonging to the left eye below, and this diplopia increases progressively and fast when the eyes are carried up and to the right."

To make a satisfactory diagnosis in a case of paralysis, we must determine the amount and kind of diplopia in each of the six cardinal positions, and note particularly whether or not the diplopia increases fast when the eyes are carried toward any one cardinal position. The muscle affected can then be deduced from the following table:

DIPLOPIA			= Paresis of	
Er. DH	>> (reatly.	R.	External Rectus
Er. DX	••	**	L.	Internal Rectus
El, DH	44	**	L,	External Rectus
El. DX	**	••	R.	Internal Rectus
Eu. & r. DL	**	**	R.	Superior Rectus
Eu, & r. DR	**	**	L.	Inferior Oblique
Eu. & l- DR	• •	**	L.	Superior Rectus
Eu. & 1, DL	••	**	R.	Inferior Oblique
Ed. & r. DR	61	44	R.	Inferior Rectus
Ed. & r. DL	**	**	L.	Superior Oblique
Ed. & 1, DR	**	**	R.	Superior Oblique
Ed. & l. DL	••	**		Inferior Rectus

This indicates the result in a compact way and has some of the advantages of a mathematical formula in that it enables us to write out and interpret our findings quickly. Thus the formula En & r. DL>> always suggests to me paresis of the right superior rectus and much more readily than a long description would do.

As we note the diplopia that the patient shows in each cardinal position, thus delimiting his field of binocular single vision, we also observe whether one eye or the other lags behind the other at any point, and thus ascertain whether his field of binocular fixation is normal or not. This latter may also be examined in the ordinary way by making the patient with both eyes open, follow a pencil or a white-headed pin held a foot or so from the eyes.

In making the two tests, of course, it is essential, first, that the patient should keep his head still; second, that he should really try to follow the light with his eyes.

3. Tests of Converging Power:

- (a) The relation between the amount of imbalance for distance, when the eyes are not converging, and for near when they are converging, affords us very important indications as to the presence of any excess or deficiency in the converging power. The comparison between the two I regard, therefore, as an indispensable part of even a cursory examination of the eye-muscles.
- (b) Convergence Near-point: This also furnishes information that cannot well be dispensed with. I measure the distance of the convergence near-point from the root of the nose, using for a test-object a fine dot, a hat-pin with a small white head, or a small bright light. In cases of hyperphoria, when even if the convergence is normal the patient finds it hard to keep up the effort because the images tend to diverge vertically, these test-objects are replaced by a fine vertical line on a round card (see Fig. 6).

The attempt to determine the convergence near-point should be made even in those cases where there is no binocular fixation at all, e. g., in divergent squint. Here it is of importance to know whether the patient does or does not make an effort to converge, and, if he does, how nearly he succeeds in bringing the eyes together. In many cases the attempt at convergence will be kept up until within two or three inches of the nose, the eyes getting nearly into line, but never quite succeeding. Such cases are of much better prognosis than those in which the convergence-effort is almost lacking.

(c) Prism-convergence (Adduction): This, in my mind, is of comparatively subordinate importance as a test, the two tests just named affording much more valuable indications. And in particular, I wish to protest against the idea that anything is to be gained by estimating the relation between prism-convergence (adduction) and prism-divergence (abduction) or in fact, that there is any normal relation at all between them. In one and the same patient prism-convergence varies greatly from time to time and can be increased by practice to four or

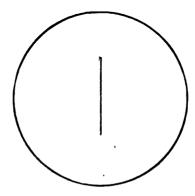


Fig. 6.—Target for Determinging the Convergence Near-Point in Hyperphoria.

The test object here is a vertical line, 1 or 2 inches in length. To a patient with a large hyperphoria or even with a vertical squint but with good converging power, this line will still appear single when it is brought to within 1.5 or 2 inches of his nose; for, though the line doubles vertically, the two images will overlap and hence appear continuous, if he can converge well upon them.

five times its original amount; prism-divergence is nearly a constant quantity and cannot be increased by exercise. To make a comparison between two such quantities, one a variable minimum, the other an unchangeable maximum, seems to me irrational

4. Tests of the Diverging Power:

- (a) The relation between the amount of imbalance at near-points, when the eyes are not diverging, and the amount for distance, when they are, affords a valuable indication as to whether the eyes diverge excessively or not enough.
- (b) Prism-divergence, determined by the strength of prism, base in, which the eyes can overcome when looking at a distant object, is also a valuable measure of the diverging

power. A prism divergence under 3° indicates subnormal and one over 9° a pathologically excessive degree of divergence.

5. Tests of Supravergence, or of the ability of the eyes to diverge in a vertical plane, measured by prisms, base up or down, afford very little information and can usually be dispensed with.

Order of the Tests.

The tests must begin with those that involve least strain of eye-muscles, hence tests for imbalance must be made before tests for movement, and the tests for distance before those for near, which bring in the disturbing element of convergence.

The field of binocular single vision and the field of binocular and monocular fixation tests are taken last of all because to make them at all carefully involves great strain on the eyes.

Routine.

Not all the tests are needed, except in complicated cases, when we may require every help we can get.

To make a satisfactory examination we must perform the test for binocular fixation and one or more tests for binocular vision, determining by both means the imbalance for both distance and near, and we must get a good idea of the ability of the eyes to converge, diverge, and make parallel movements. In choosing our tests we must insist, in the first place, upon accuracy, in the second place upon delicacy; and, out of several tests which are accurate enough and delicate enough to serve our turn, we will select those that are the simplest and quickest. These considerations lead us to the accompanying routine.

Ordinary Routine.

- I. Determine Deviation for Distance by-
 - (1) Screen and (2) Parallax simultaneously.
 - (3) Maddox rod.
 - (4) Phorometer.
- II. Determine Deviation for Near by-
 - (5) Phorometer.
 - (6) Screen and (7) Parallax simultaneously.
 - (8) Maddox rod.

III. Determine

- (9) Convergence Near-point.
- (10) Prism-divergence (Abduction).
- (11) Prism-convergence (Adduction). Usually omit if 9 is normal.
- (12) Field of Binocular Fixation and (13) Field of Binocular Single Vision taken simultaneously.

This answers for all ordinary cases. Indeed, I usually omit the Maddox-rod test for near, and if the other tests show concordant results, I often omit the phorometer for both distance and near. With these omissions the examination can be made in three or four minutes.

Special Routine in Squint: Here usually all the tests of binocular vision fail us, and we are dependent on the screentest which is hence of especial value; also upon the determination of the convergence near-point and upon the excursions of the eyes. We also employ the various tests (red glass, bar reading, stereoscope, etc.) to determine whether binocular vision is present or not. In measuring squint, I regard the screen test as far superior to the perimeter or to any similar device that depends upon the position of the corneal reflex, for

- 1. It is more accurate.
- 2. It can measure very small squints.
- 3. With it we can measure deviation for both distance and near. This is hard or impossible to do with the perimeter.
- 4. We can measure both the primary and the secondary deviation. Impossible with the perimeter.
- 5. Can measure vertical and lateral deviations simultaneously which cannot be done with the perimeter.
- 6. Can dispense with cumbrous apparatus, and can use the test in gauging effect of operations.

Special Routine in Paralytic Cases: The tests for imbalance are here of less importance. We here

- (a) Apply the screen test in different directions of the gaze.
- (b) Take special care to measure the primary and the secondary deviation.
- (c) Take special care to determine accurately the field of binocular single vision and the field of binocular fixation.

In specially difficult cases, we determine also:

- (d) The declination in paralysis of elevators or depressors.
- (e) The field of monocular fixation with the tropometer or perimeter.

Recently Bielschowsky has advanced another means of diagnosis in cases of paralysis, namely, the varying distance between the double images produced by inclination of the head toward either shoulder, but for reasons into which I have not time to enter now, I consider his reasoning to be based on a fallacy.

CONTRIBUTION TO SERUM THERAPY, ESPECIAL-LY OF ULCUS CORNEAE.*

By DR. L. PAUL.

ASSISTANT IN THE CLINIC.

BRESLAU.

TRANSLATED FROM THE GERMAN BY DR. T. T. BLAISE,
MASON CITY, IOWA.

Serum therapy has made marked progress during recent years. Nor is it alone in those diseases of which we know the bacteriological causes that it has been employed, but even for various diseases, the etiology of which is but little known to us, have we sought to procure an effective serum.

Two different principles underlie, in general, the serum treatment: it is either sought to incorporate into the diseased body an antitoxin which combats the toxic substances arising from the disease agents (as in tetanus), or it is the object to introduce into the body specific substances that are destructive to the bacteria, i. e. bactericidal, (as in cholera and the plague).

Also the most recent attempts to institute a serum treatment in affections of streptococci and in anthrax, aim at the production of a substance of bactericidal nature and the introduction of the same into the organism.

So also the pneumococcus serum which of late has been much employed in pneumonia, especially in England, contains preferably bacteria-destroying substances.

The treatment of pneumonia with this serum is based scientifically on the conception, that the body spontaneously will produce antibodies as a reactive sequence of the disease, necessary to destroy the bacteria, but that it requires a sufficient period of time during which the diseased organism may succumb. It is consequently desirable to introduce early into the body anti-substances, especially since the disease focus is but little amenable to other therapy.

^{*}Klinische Monatsblätter für Augenheilkunde, Jan., 1905.

The idea of applying serum therapy also to pneumococcal disease of the cornea, ulcus serpens, was two years ago suggested by Römer, of Wurzberg.

In serpent ulcer of the cornea the chances for spontaneous recovery are far less than in pneumonia, inasmuch as here, on account of the smallness of the disease process, the necessary reaction cannot be achieved by the organism, and the latter can only tardily effect a recovery. For this reason serum therapy seems to be absolutely indicated in ulcus serpens.

However, ulcus serpens can be relatively well treated and easily influenced by other therapeutic measures, especially by cautery and paracentesis.

It must not be overlooked, however, that these two measures have certain disadvantages not to be underestimated.

Usually cauterization results in quite heavy cicatrices which later prove an optic hindrance. In paracentesis after Saemisch, synechiæ easily follow, and not infrequently paracentesis culminates in secondary glaucoma.

Replacing these therapeutic measures by serum therapy would be most desirable, providing the same is of real efficiency.

Römer¹ eventually succeeded in showing that in animals which were immunized against pneumococcic infection, the corneal pneumococcic infection runs a much milder course than in animals not immunized.

These results encouraged him to attempt in man also serum therapy in ulcus serpens.

Accordingly he had the firm of Merk, of Darmstadt, prepare a poly-valent² pneumococcus serum of as high value as could be obtained, by high degree immunization of animals against pneumococci.

His results which he gives in the above cited treatises, are extraordinarily salutary, and are exceedingly encouraging for

¹Römer, Paul: Experimental Bases for Clinical Experiments with Serum Therapy of Ulcus Serpens, after Investigations of Pneumococci Immunity. Archiv. für Ophthalmologie, 54, I., Leipzig, 1902. Ibid: Brief Report on the Present Status of Serum Therapy of Ulcus Serpens. Heidelberger Ophthalmologische Gesellschaft, 1903. Ibid.: Introduction to Clinical Investigation of Serum Therapy of Ulcus Serpens. Zeitschrift für Augenheilkunde. XI, 1904. Ibid.: On Prophylaxis of Ulcus Serpens Corneae in Unterfrauken, Darmstadt.

²According to Ehrlich's views an active serum, i. e., an effective serum, consists of two separate bodies; the labile body, the complement of which pre-exists in every normal organism, and of the stabile body arising from the products of the antibody of the

general introduction of the serum therapy.

It was accordingly quite desirable that as early as possible an accurate test of the serum should be instituted in the various clinics and hospitals.

Accordingly Privy Counsellor Uhthoff delegated me to make a practical application of the Römer pneumococcus serum in all proper cases of ulcus serpens.

The necessary serum was furnished gratis by the firm of

Unfortunately the number of tests which I instituted was small, on account of the costliness of the serum at the time, this reducing the quantity delivered to us. But in consequence of this I selected only those cases with greater care which were particularly adapted for serum therapy.

After confirmation of the clinical picture of ulcus serpens by bacteriological examination, we selected those cases in which the ulcer had not yet been treated and which had not advanced to such degree as to render the serum treatment hopeless, but which on the other hand were not so small and insignificant as to give hopes of spontaneous recovery without any treatment.

Treatment was instituted according to Römer's original specification.

According to these the patient would receive only a comparatively small amount of serum subcutaneously, but simul-

specific serum, i. e., of the immunized animal, the so-called amboceptor. To be effective it is necessary that the amboceptor enter as a link between the complement and the bacterial substance and thus combine the two. The amboceptor must, on the one hand, conform to the complement, and on the other, to the bacterial substance. Since the complements are not constantly identical with each other, but since, according to the late views there exist complements of various properties, it remains in doubt whether the human complements conform to the immunizing serum which is The probability that amboceptors derived from a lower animal. exist that conform to the complements of the human bodies. increases when the immune serum is procured from different animals, among which one at least may yield a conforming amboceptor. Since also the bacterial cultures (Bäkterienstamme), which cause disease, and are respectively employed for immunization, are not always exactly identical with each other, it becomes uncertain that the amboceptors of an immunizing serum link into, or conform with bacterial substances of a given disease exiter, but will most probably do so if the serum is prepared from the greatest possible number of different cultures of the same species. A serum, then, which is on the one hand derived from different animals, and on the other, is procured through the immunization of the animals with various bacterial cultures, is called a polyvalent serum.

taneously the patient was to receive subconjunctival serum injections and serum instillations upon the ulcer. Römer discontinued later the subconjunctival injections, but gave much larger subcutaneous doses.

By the first method, with which alone I was familiar in the beginning, I treated six patients.

After diagnosis was confirmed with certainty, the patients received at once from three to four ccm. of serum subcutaneously and at the same time a subconjunctival serum injection of $\frac{1}{2}$ ccm. and every one or two hours one drop of serum was dropped upon the ulcer.

The result was only partially favorable. In two patients the ulcer healed smoothly with this treatment.

In the four remaining patients this therapy failed utterly, it having been repeated the following day and the day after that.

Three cases had to be cauterized on the second and third day respectively.

In the last cases after repeating the therapy three times, paracentesis after Saemisch had to be resorted to.

The four patients following were treated according to the new procedure by giving large subcutaneous doses and without subconjunctival injections.

This therapy also failed to give the expected results, despite its several repetitions and one patient having even thirty ccm. subcutaneously.

In one solitary case it could be assumed that the ulcer was perhaps delayed in its progress, but ultimately it became necessary to resort to the cautery.

In the remaining cases, in justice to the patients, it became necessary on the following day, or day after that, to cauterize on account of the persistent progress of the ulcer.

Thus I can only acknowledge a complete result in 18 per cent., and partial result in 27 per cent. of the cases.

I did not observe any bad complicating effects at all. Pulse and temperature remained normal, nor was the general condition of the patient disturbed. At the point of the subcutaneous injections occasional temporary swelling and pain occurred, but no phlegmon or abscess arose.

The experiments with animals which I instituted resulted the same as Römer's, i. e., animals (rabbits) which had been treated with serum ran a milder course of pneumococcus infection of the cornea than those not injected.

In my experiments with serum therapy a striking difference appeared between the first and the last cases treated, which

was occasioned by the different deliveries of the serum. While under the treatment of the first quantity of serum received, which was employed in four patients, two patients recovered, (50 per cent.), the later treatment remained totally without success in spite of larger doses.

Such differences should not in themselves be at all surprising, especially if we know how exceedingly difficult it is, to uniformly immunize animals against a given bacterium, even in view of the fact that there are individual differences in the immunity to be achieved in most animals. The production of a serum of constant and even strength is one of the chief difficulties of serum production.

Besides this there is the possibility that the serum became too old in the factory or in my hands.

Italian authors especially sought to improve the serum. Tizzoni dessicated the same in vacuum in the manner as has been done with the diphtheria and tetanus sera, in order to render it more preservable and also more concentrated. The serum produced by him accordingly was in a dry form.

Calderaro¹ instituted extended after-proofs with Römer's and Tizzoni's sera as to their results, which yielded better results with the use of Tizzoni's serum. In expressing his moderate satisfaction his assertions differed in fact but slightly from mine. Thus he succeeded only to effect the recovery of very small ulcers that had only existed for from four to six days, while for the larger ones cauterization and paracentesis had to be resorted to.

The results of Schnege² (in the Königsberg eye clinic) substantiate in part the therapeutic value of the serum, since of eleven ulcers treated with serum only, seven were actual serpent ulcers confirmed by bacteriological finding of pneumococci, and of the seven ulcers, two did not recover under serum treatment.

The results achieved by Krückmann with serum treatment, as reported in the Medical Association of Leipzig, are not exceptionally good.

¹Calderaro: On the Treatment of Hypopyon-keratitis with Prof. Tizzoni-Panichi and Dr. Römer's sera. Wochenschrift für Therapie and Hygiene des Auges., 1903. II. Ibid: Sulla cura della cheratite-miopio con i sieri del prof. Tizzoni-Panichi e del dott. Romer. La clinica oculista, 1903, August.

²Schnege: Contribution to the Treatment of Ulcus Serpens Corneae. Inaug-Dissert, Königsberg, 1904.

Zur Nedden's1 results are similar to my own.

To me it seems without doubt that in time the serum and the technique of the treatment will be perfected. We have at the present time no accurate basis for the dosage of the serum. Even the authorities on serum therapy are admittedly at sea in regard to this point. The best proof of this is furnished by the change inaugurated in the directions prescribed for its application, and the difference in dosage practiced by the several authors. Calderaro, e. g., administered subcutaneously only one dose of three or four ccm., while Römer gives about ten ccm. subcutaneously.

To begin with, it is necessary that a very strong serum should be produced, if with such small dose as ten ccm. subcutaneously, a sufficient amount of anti-bodies shall reach the small corneal structure, itself of low diffusability, and there combat efficiently the bacteria.

One might suggest that the efficiency might be increased by increasing the frequency of the administration. But we lack the basis upon which to graduate the size of the dose, since we do not know on the one hand how much of a dose is required and on the other we do not know how large a dose would be deleterious to the patient, since the serum in large quantities is certainly not a substance of indifferent qualities.

Perhaps Römer or others will succeed in solving the problem, and perfecting the serum sufficiently as to make it practicable in the treatment of ulcus serpens.

In the mean time the chances for the success of serum therapy in the treatment of ulcus serpens are so uncertain, that this therapy can be given preference to the far more efficient measures of cautery and paracentesis, only in isolated cases.

REPORT OF CASES.

1. Vogt, August, employer, act. 52. Eight days previously injury to the left eye. On Nov. 17 left cornea shows a central corneal ulcer of two mm. diameter with typical progressive margin downward and outward.

Hypopyon of one mm. height in anterior chamber. Severe iritis. V.: fingers at a distance of 1 or 2 m.

Bacteriological examination reveals pneumococci in ulcer cavity.

Feb. 17, 1903: Subcutaneously four ccm. of serum and one-

Zur Nedden: Clinical Experience of the Effects of Römer's Pneumococcus Serum in Ulcus Serpens. Klinische Monatsblätter für Augenheilkunde, 1904.

half ccm. serum subconjunctival; at each half hour one drop of serum into conjunctival sac.

Feb. 18, 1903 Three ccm. of serum subcutaneously. at each half hour one drop of serum in conjunctival sac.

On Feb. 18th, the progressive margin has almost completely disappeared and the ulcer floor appears clear.

On Feb. 24, there remains but a flat defect in the corneal substance with a grayish cicatrical ground. The hypopyon has wholly disappeared.

On March 1st, only a small facet of one and a half mm. in diameter is visible on the fully clear cornea, bulbus entirely pale. V:6/18, V. field unreduced. Recovered; discharged.

2. Schultz, Martin: farmer, aet. 61. Five days prior received injury to left eye.

On Feb. 27, 1903, a centrally located grayish yellow corneal infiltrate of three mm. diameter is discovered on left cornea. At the upper margin a somewhat engorged border exists. Epithelial layer covering the infiltrate is partially intact.

Hypopyon of two nim. in depth exists in anterior chamber. Severe iritis.

Bacteriological finding: numerous pneumpococci in pure culture from ulcer ground.

Feb. 28, 1903. Four ccm, serum subcutaneously, one half ccm, subconjunctival and every half hour one drop of serum into conjunctival sac.

March 1, 3.0 ccm, serum subcutaneously and every half hour one drop instilled into conjunctival sac,

On March 2nd, a well marked, progressive infiltration zone encircling the ulcer exists. The diameter of the ulcer is now five mm.

In consequence of this the serum treatment is discontinued and the progressive margin of the ulcer cauterized.

Even during the further progress of the case the course of the ulcer could not be influenced with serum administration; on the contrary, a second cauterization became necessary.

3. Maijutsch, John, cottager; aet. 42. Eleven days prior he received injury to the right eye. On Dec. 10, 1903, there exists on right cornea a typical, central ulcus corneae serpens with progressive border upward and outward. Diameter about 3 mm.

Small hypopyon in anterior chamber. Slight iritis.

Pnuemococci in ulcer cavity.

Dec. 10, 1903. Three ccm. serum subcutaneously and at every half hour one drop of serum into conjunctival sac.

Dec. 11, 1903. Three ccm. serum subcutaneously and at every half hour one drop of serum into conjunctival sac.

On Dec. 12. The progressive margin is some what milder.

On Dec. 14. The progressive margin is somewhat reduced, hypopyon has disappeared and iritis is less.

On Dec. 19, there remains to the right a corneal facet, while the remainder of the cornea is entirely clear and the eyeball shows no more irritation. V: 6/8. Visual field undiminished. Recovery; discharged.

4. Hermann, Fritz; factory laborer, aet. 32. Injury to right eye six days prior. On Jan. 28, 1904, there exists on right cornea a central ulcer of four mm. width, with marked yellow, pustular infiltration of floor of ulcer and with progressive margin drownward and inward.

Hypopyon of considerable size in anterior chamber. Severe iritis.

Bacteriology of ulcer ground: pnuemococci.

Jan. 28, 1904. Three ccm. serum subcutaneously ½ ccm. serum subconjunctival and at each half hour one ccm. serum into conjunctival sac.

Jan. 29, 1904. Three ccm. serum subcutaneously and at every half hour one drop of serum into conjunctival sac.

From Jan. 30 to Feb. 7, one drop of serum into conjunctival sac every holf hour.

Feb. 3. Three ccm. serum subcutaneously.

Feb. 7. Three ccm. serum subcutaneously.

On Feb. 1, the ulcer has advanced somewhat at margin downward and outward, while the central part has cleared up some.

During the following days the ulcer shows but little change, and the hypopyon remains unchanged in size.

On Feb. 10, paracentesis performed after Saemisch, and hypopyon is removed with iris pincette.

Healing of cornea now progresses smoothly with anterior synechia.

5. Kaethner, William, farm laborer, aet 54. Injury to left eye 14 days prior. On Jan. 30, 1904, central, corneal ulcer exists on left cornea, measuring from three to four mm. in diameter, with typical progressive margin inward and outward.

Hypopyon in anterior chamber of about three or four mm. in depth. Severe iritis.

Bacteriology of ulcer: pneumococci in quantities.

Jan. 1904. Three ccm. serum subcutaneously; 1/2 ccm.

serum subconjunctival and one drop into conjunctival sac every half hour.

On Feb. 1st, the ulcer has made definite progress nasalward and also temporally.

Progressive margin cauterized and serum therapy discontinued.

6. Neugebauer, Johann, freeholder, act. 46. Fourteen days prior he received injury to right eye. On Feb. 12, 1904, there is discovered on right cornea, in the lower and outer quadrant a crescent shaped, grayish-white ulcer with progressive border tending inward and upward.

Small hypopyon in anterior chamber. Moderate iritis.

Pneumococci found in ulcer cavity.

Feb. 12, three ccm. serum subcutaneously; ½ ccm. serum subconjunctival and one drop in conjunctival sac.

Feb. 13, three ccm. serum subcutaneously; and $\frac{1}{2}$ ccm. serum subconjunctival.

On afternoon of Feb. 13 it is observed that the ulcer has advanced inward and upward and the hypopyon has increased.

Progressive margin is at once cauterized and serum therapy discontinued.

The following cases were treated according to the modified method as described by Römer in the third copy of Zeitschrift für Augenheilkunde, 1904. The patients received a single dose of ten ccm. of serum subcutaneously and frequently one drop of serum into the conjunctival sac. If no improvemnt occurred on the following day, patient received a second dose of serum, ten ccm. subcutaneously.

7. Leschik, Johann, aet. 46. Eye has been diseased for 14 days, supposedly without having sustained injury. On March 21 there is discovered on right cornea a typical serpent ulcer, quite centrally located, with a narrow progressive margin inward, upward and downward. In the center on the the ulcer floor lies a gray, striped infiltrate, while the remaining portion of the ulcer is generally clean and shallow. Diameter of ulcer is eight mm. Hypopyon of 1 or 2 mm. in anterior chamber. Aqueous humor is turbid. There is marked iritis.

Bacteriology: extraordinarily large quantity of pneumococci. March, 21, 1904. Ten ccm. serum subcutaneously and one drop of serum in conjunctival sac every two hours.

March, 22, 1904. Ten ccm. serum subcutaneously and one drop serum in conjunctival sac every two hours.

March, 25, 1904. While the ulcer is clearing up in the upper portion, it seems still slightly progressing below. On March 27 there seems to be complete stasis. On March 29 it again begins to advance nasalward.

March, 29, 1904. Ten ccm. serum subcutaneously and one drop into conjunctival sac.

Despite this therapy the ulcer progresses nasalward, consequently serum therapy is discontinued and cautery applied.

8. Schreck, Heinrich, stone-worker, aet. 44. Eleven days prior injury to left eye. On March 17, 1904, a typical ulcus corneae serpens with progressive margin inward and upward is discovered on the left cornea. Diameter of ulcer, six mn. A 2 mm. hypopyon in anterior chamber. Severe iritis.

Bacteriology of ulcer: numerous pneumococci.

May, 17, 1904. Ten ccm. serum subcutaneously and one drop serum into conjunctival sac every half hour.

May, 18, 1904. Ten ccm. serum subcutaneously and one drop serum into conjunctival sac every half hour.

On May 19, ulcer perforates.

On May 21, anterior chamber is restored.

In spite of this, the ulcer showed above slight progressivness during the following days. Serum treatment is then discontinued and progressive margin cauterized on May 24, 1904.

9. P. Hellmich, Christiane, laborer, aet. 41. Eight days previous received injury to left eye. On July 6, a yellow, firm penetrating, suppurating infiltration is observed on left cornea. No distinct progressive margin. Hypopyon of 2 mm. in anterior chamber. Severe iritis.

Bacteriology of ulcer: numerous typical pneumococci.

July 7, 1904. Ten ccm. serum subcutaneously and one drop into conjunctival sac every half hour.

In spite of this the infiltrate progresses on both sides. Thus, on July 9, 1904, paracentesis after Saemisch is performed and serum therapy discontinued.

10. Wolf, August, machinist, aet. 42. Injury to left eye 9 days prior. On July 18, 1904, a rather large ulcer, centrally located exists on left cornea, with progressive border downward and outward.

Diameter of ulcer, 6 mm. Small hypopyon in anterior chamber. Severe iritis. Bacteriology of ulcer: pneumococci.

July 18, 1904. Ten ccm. serum subcutaneously and one drop into conjunctival sac every half hour.

Since the ulcer continued to progress extensively by the following day, the serum therapy was discontinued and the progressive border cauterized.

11. Fielder, Ernst, farmer, act. 76. Injury to left eye

fourteen days prior. On August 15, 1904, is observed on the inner half a round, grayish-white ulcer of 4mm. diameter, with progressive margin above. Large hypopyon in anterior chamber. Severe iritis. Bacteriology of ulcer: pneumococci.

Aug. 15, 1904. Ten ccm. serum subcutaneously and one drop of serum every half hour into conjunctival sac.

Aug. 16, 1904. Ten ccm. serum subcutaneously and one drop of serum every half hour into conjunctival sac.

Since notwithstanding this treatment, the irritable symptoms increase, the serum treatment is discontinued and the progressive border cauterized.

REMARKS.

Römer, in his latest appearing works, especially in his large work, "The Lateral-chain-theory (Seitenkettentheorie) of Ehrlich and Its Significance to Medical Science," speaks of experiments to heighten the immunity of the patients against pneumococci by application of a simultaneous method (Simultanmethode) and to achieve thereby a decidedly more favorable influence upon the disease process.

The principle under which he pursues his experiments, is to combine with the passive immunization against pneumococci by serum administration, the inoculation with dead pneumococci cultures, and thus to excite the organism in this manner to produce its own immune-bodies against pneumococci. From this inoculation with dead pneumococci cultures, the patients react only with a temporary and inconsiderable temperature elevation.

It remains to be seen whether through this method a positive result can be obtained. To me it does not seem impossible that with active immunization of man against pneumococci with dead cultures a safe immunization can be obtained. But whether this immunity will appear at the proper time to serve its purpose in ulcus serpens already in progress, and, whether the simultaneous passive immunization is salutary, does not seem so certain to me, especially since according to the latest hypotheses of Ehrlich, a simultaneous passive immunization by the union of the immune bodies and the bacteria-receptors (Bakterien-rezeptoren) of the active immunization may be a hindrance.

Of course, it would be safest from a prophylactic view to immunize all people against pneumococci, especially harvest laborers, as Römer proposes. But there are such serious obstructions against the practicability of this idea that the procedure seems quite hopeless. To begin with, it is not as yet established with certainty that such immunization is totally without danger to health, and that its application in healthy subjects without pre-indications existing, would be advisable. Again it is known that the immunization lasts only for a limited period, and that such immunization would have to be frequently repeated. Finally, the per cent, of harvest laborers who are affected with ulcus serpens is decidedly small. The danger that this disease might appear epidemically or endemically, under which circumstances popular immunization would be justifiable, does not exist. To protect some certain individual against this disease, one would be compelled to inaugurate a procedure, the safe action and effect of which is not as vet established: a procedure of whose total absence of danger we are not aware, and the carrying out of which would be unthinkable without law and compulsion.

In conclusion I desire to express my sincerest thanks to my highly honored chief, Privy Councillor Uhthoff, for the use of material and his kind support.

FACTS VERSUS FANCIES CONCERNING HETERO-PHORIA

By F. C. Hotz, M. D.,

CHICAGO.

Although according to Dr. Gould there are 61 reasons why glasses may not give relief, the truth of the doctrine that refraction errors play a very prominent role in the etiology of headaches and functional neuroses, is universally recognized and accepted by the oculists of this country,* and has also begun to percolate into the ranks of the general practitioners. Neither the fact that the correction of abnormal refraction does not give relief in every case, nor the fact that many ametropes go through life without experiencing any discomfort from their uncorrected ametropia, is regarded a valid argument against the overwhelming clinical evidence recorded in favor of this doctrine.

Now one should think the same logic would apply to the question whether muscular unbalance can induce similar neryous disorders as ametropia and consequently whether heterophorias should receive our careful attention and serious study. Many reports have been published by competent and trustworthy observers, showing their patients were benefited by the correction of their heterophoria; but in spite of these records there still exists a great diversity of opinion on this subject among oculists. Some believe in heterophoria being a source of eyestrain; some are indifferent, while the majority of oculists, I believe, still hold an antagonistic position. Their favorite argument against the treatment of heterophoria is to point to many instances in which the treatment has been of no benefit and to some cases in which the attempted correction of heterophoria by operations has left the eyes in worse functional condition than before. We may grant all this and still maintain these arguments prove nothing; for negative results can never overthrow positive facts; and that many patients have been benefited by the correction of

^{*}But not in Europe where last summer I have seen the refraction work still done in the most primitive and crudest manner.

heterophoria is a fact which no one can deny, unless one should doubt the veracity of all writers on this subject.

Furthermore, we must not forget that we all gain by experience and achieve better results in any line of our work by long practice, be it refraction work or cataract operations or heterophoria. And as the proper management of heterophoric cases is a particularly difficult problem, it is no wonder that the beginner will make many mistakes in the selection of his cases and the method of treatment, and therefore will often be disappointed by the result. But to use these failures as an argument against any and all treatment of heterophoria is illogical and unjust.

With particular emphasis some writers have referred to cases in which the treatment of heterophoria has completely failed, but in which the careful recorrection of the ametropia has brought the desired relief. Ergo, the treatment of heterophoria is useless; accurate refraction work is the sole panacea for the relief of eyestrain! In the Archives of Ophthalmology of last July* a writer gave expression to this extravagant view in the following words: "Dr. Savage and others call the heterophoria that can be corrected by glasses "pseudo" and that which cannot be corrected by glasses the "true." That is, the esophoria remaining after the hypermetropia is corrected, the exophoria remaining after the myopia is corrected, esophoria with myopia and exophoria with hypermetropia, they call the true heterophoria and should be treated by partial tenotomies. I believe that the reason these cases are not all found to be "pseudo" is that the refraction work is faulty*. I base this statement from a large percentage of my patients who have been under those who believe in true heterophoria."

If such fanciful opinions are still entertained and published in the face of the large mass of evidence already on record providing that hetrophoria is not a theoretical fancy but a real condition. I believe further publications of clinical facts concerning the treatment of heterophoria are not entirely superfluous. I have selected for this communication such cases which have been treated many years ago and have remained under my observation a long time afterwards so that I can vouch for the permanency of the results. In some of these cases there was no error of refraction and in those where am-

^{*}Page 424.

^{*}The italics are mine.

etropia was present, it had certainly no effect upon the health or the nervous system of the patients.

1. Miss M. W., 22 years old, came to me in September. 1888, with a history of lifelong asthenopia. As a school girl already she always suffered intense pain in and about the eyes and in the back of the head after studying; one-half hour of reading or writing is followed by violent pain, especially in the back of the head. Lately there is a continuous dull pain in the eves: "she is always conscious of her eyes." and they are very sensitive to light. She is of medium size, well nourished but pale and languid; does not hold herself erect and hardly lifts the feet from the floor when walking across the room: the picture of a completely tired-out girl.

Her parents had consulted many physicians and oculists; the former prescribed tonics "to build her up;" the latter ordered glasses; the pair she has been wearing constantly the past two years are ± 50 c90; but she has not received any benefit. Ophthalmoscope shows normal fundi; and under homatropin V. 20/20 with +50 50c90. Cover test: Slight convergence at distance and marked divergence at near point. Rod Right Hv. 1°, with Es. 4° at distance and Ex. 4° at near point. As at that time I had but a limited experience with heterophoric cases. I kept this case under observation two weeks and repeated the tests a dozen times. But when the findings of these repeated examinations did not vary I felt warranted to regard the hyperphoria as the source of the trouble and to advise its correction by a graduated tenotomy of the superior rectus of the right eye; which operation was performed on October 10. The healing was uneventful; and the operation had the most telling effect upon the eves and the general condition of the patient.

Dec. 4. Orthophoria: No pain in eves or headache since the operation; can read for hours with perfect comfort.

March, 1889. Orthophoria: Has not worn her glasses since two months, and did not feel any worse for it. Is bright and cheerful, walks erect and with a firm elastic gait: has developed into a robust woman.

In 1890 she got married; has three children and enjoys perfect health and the comfortable use of her eyes to this day.

2. Mrs. N., 28, a victim of headaches after near work and shopping, consulted me October 27, 1897. Married three years; one child; but asthenopia dates back to school life. Wearing +1 +50c90 constantly since one year.

Examination: Normal fundi; under homatropin shadow reversed by +3 in vertical and by +4 in horizontal meridian: V. 20/15 with +1.50 +50c90.

October 29. Accommodation restored: V. 20/20: also with +1,00 +50c90; with this correction Es. 8° by phorometer and rod test. Ordered for trial adducting Pr. 2° each eve.

November 2. Has been reading with the prisms (without the sphero-cylinders) and had no headaches. Es. 12° and after wearing prism 5° over each eve for twenty minutes Es. increased 18°. Ordered Pr. 6° each eve.

November 4. With last glasses felt very comfortable and could go shopping without coming home with a headache. Es. 20°.

November 19. Has gone without the prisms the last two days and had violent headache after reading. Es. 12°: prism convergence 48°; prism divergence 1°. Advancement of externus of left eve.

November 24. Severe attack of headache after the operation: but none since.

December 3. Es. 2°, prism divergence 7°; no headaches after reading and shopping.

February 4, 1898. Has been using her eyes day and night without a sign of headache.

July 1, 1901. No return of headaches.

February 16, 1905. Has enjoyed perfect health all these vears.

3. Miss B., 30, consulted me July 12, 1898. Strong robust woman in good health. Since many years headaches after near work of several hours; during reading vision often blurring and letters running together; and during the past year often noticed the left eye suddenly turning out when looking steadily at a person.

Examination. V. 20/20; under homatropin Hy. 1/2 D; under cover marked divergence; Ex. 15° at distance; 20° at 30 centimeters.

July 22. Advancement of internus of left eve.

Sutures removed: no divergence under cover. September 9. Orthophoria at distance; at 30 centimeters left eve slightly oscillating with a tendency to divergence.

December 31. Perfect fixation at distance and near.

September 8, 1899. Has been teaching and used her eyes a good deal; no headaches; binocular fixation maintained steadily up to 10 centimeters.

July 26, 1900. Has used her eyes a great deal and has not

felt the slightest discomfort. Orthophoria at distance; Ex. 2° at 30 centimeters.

- 4. This case is particularly interesting on account of the different schemes by which different oculists endeavored to relieve the asthenopic troubles.
- 4. P. M., 23, draughtsman in architect's office; strong and healthy. During school life was often obliged to stop studying on account of violent headaches; and in his present occupation his eyes are giving him a great deal of trouble; they ache when he gazes steadily at distant objects and they ache when he works over his plans for an hour. Headache has become his regular companion every afternoon; and even when free from actual pain he has the feeling of a tight band around his head which makes him exceedingly irritable and unfit for mental work of any kind. During the past three years has consulted three oculists. No. 1, gave him cylindric glasses for work; No. 2, gave him prisms for work, and No. 3 prescribed cylinders for distance and cylinders with prisms for work. But none of these glasses brought any relief.

I found the slight hyperopic astigmatism (+.25c 180) which had been corrected by the former oculists and Ex. 5° which was corrected by oculist No. 3 in the working glasses (+.25c 180 with pr. 2° base in). I let him wear the glasses constantly for two days. He felt no better, but Ex. had increased to 8°. I now made him wear pr. 4° over right eye and pr. 3° over left eye; after two hours he was relieved of that tight feeling around the head and the next day he could work all day without headache.

September 21, 1897. Has been wearing the prisms (without the +25 cylinders) a whole year and worked all day and read at night with perfect comfort. But he is anxious to get rid of the glasses and willing to submit to the operative correction of the exophoria. Ex. is 10° at distance and 20° near.

October 1. Advancement of internus of right eye.

October 8. Advancement of internus of left eye.

December 17. Orthophoria at D; Ex. 4° near.

March 17, 1899. Same condition; and free from asthenopia since operations.

It is evident in this case the refraction error was certainly not the cause of the asthenopia or the cylinders prescribed by the first oculist would have given partial relief, at least. The second and third oculists, recognizing the exophoria as a disturbing element, made the mistake of prescribing prisms

for work only, though the constant distress the patient suffered also when not at work plainly indicated that the exophoria affected the nervous system at all hours and that if prisms could relieve the suffering they ought to be worn all day. And then, they made another mistake; they evidently prescribed the prisms on the findings of one examination. which revealed only a part of the exophoria; instead of spending the time for developing the whole amount of exophoria and changing the strength of the glasses accordingly. This is as grave a blunder as if in refraction work glasses are prescribed for the correction of the manifest part of ametropia only.

These four instances, I think, are sufficient for our purpose: for if the facts recorded in these cases cannot overcome the fancies and prejudice of those who do not believe in heterophoria as a disturbing element, 40 or 400 cases would not convince them either. But I wish to add one more case because of an experiment which conclusively demonstrated that the existing hyperphoria was the cause of the migrain.

5. Mrs. F., 40, consulted me October 3, 1903. She is a very intelligent woman, not of an imaginary or hysterical disposition; very fond of books, but unable to enjoy them; for since twenty years, reading has made her life miserable because, if she read ten minutes in the morning she would have violent headache with nausea the rest of the day; and if she read in the evening, she suffered for it the whole next day. As long as she refrains from reading she never has an attack of migrain. Has been under the care of many physicians and specialists and has had a dozen different glasses: since two years has worn +1c90 for distance and +1 +1c90for reading.

Examination: Each eye V. 20/30; with +75c90 20/20: with +1 +75c90 reads Snellen 0.5 very easily. Rod. Es. 4° and Right Hy. 2°; Phorometer Es. 2°, Right Hy. Right up version 4°, down version 2°.

October 10. These findings being constant at several examinations I prescribed +75c90, with $1/2^{\circ}$ Prism (R. E. base down, L. E. base up) for distance; and +1.50 +75c90with the prisms for reading.

November 30. Glasses have given no relief; reading is just as impossible as before and increasing the prisms made matters worse.

May 20, 1904. I had been at the point of giving up the case, but the lady was so insistent in her conviction that her

eves were the cause of her migrain that ten days ago I decided upon the following experiment: She was to keep the right eye covered all day for three days and to read every afternoon or evening with the left eve and then to repeat this same experiment with the left eve closed all day. has faithfully carried out my directions and called today to report with great delight that she has read several hours each day; in fact she had felt as though she could read all day; for she had not had the slightest discomfort at any time. But vesterday she read ten minutes only with both eves open and suffered for it by a bad attack of her old migrain.

These experiments clearly showed that the refraction had nothing to do with the migrain: for if the refraction work was faulty the patient could no more have enjoyed reading with one eve than with both; and if the ametropia was accurately corrected why could she not read with both eyes as comfortably as with one alone? The nervous strain which brought on the migrain attacks evidently was caused by the effort to maintain binocular fixation; and the condition that handicapped the muscles to maintain binocular fixation was the hyperphoria. I was now so firmly convinced that restoring the vertical balance of the muscles would give this patient the long sought for relief that on June 3, 1904, I performed a tenotomy of the superior rectus of the right eye. The result was that the patient could read all summer several hours each day without subsequent headaches. But last winter she had an attack of the grippe which left her in a very weak condition: and naturally also affected unfavorably the use of her eyes. I do not regard this case as definitely settled, and have mentioned it only, as stated above, on account of the experiment showing the different effect of binocular and monocular reading.

I have tried this experiment in several other heterophoric cases with the same results; but I wish to state once more that in making this test it is very essential that binocular vision has been suspended by keeping the one eve closed for several hours before reading is attempted.

ABSTRACTS FROM ANGLO-AMERICAN OPHTHAL-MIC LITERATURE.

RV

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Congenital Opacities of the Cornea.

MARSHALL, C. DEVEREUX, London (Ophthalmoscope, December, 1904), gives an account of a case of congenital corneal opacities occurring in a male Jew baby, which was six years of age at the time of this observation. The condition was as follows: The right cornea was opaque, and beginning to become staphylomatous. The left cornea was likewise opaque, but was not bulging; it was so dense that the iris could only just be made out on one side. There was no evidence of perforation. There was no history of ophthalmia neonatorum or perforation. The origin of this condition was probably intrauterine inflammation, leading both to faulty development of the eyes and also to destructive changes of the cornea itself.

S. H. B.

Further Investigations on Accommodation.

GROSSMAN, KARL, Liverpool (Obhthalmic Review, December, 1904), in a recent publication on the mechanism of accommodation, advances strong arguments in support of his previous statements. He has extended his observations to the eyes of bullocks and cats with confirmatory results. The details of these observations are full of interest. In conclusion, he acknowledges the priority of Besnio's work and refers to several points which are disputed by Tscherning. Grossmann sates that the flattening of the periphery of the lens during accommodation is in itself of no importance; it is simply an accessory to the increased curvature of the center. which is the essential point for the accommodation. dead and excised lens does not admit of any unmodified conclusions as to the behavior of the lens in the living eve. The quantities calculated (not measured) by Besnio for the increase of the diameter of the lens are far too small (fractions of a millimeter) to admit of any conclusions as to the alteration of the equatorial diameter of the lens. Grossmann's direct measurements gave an apparent difference of 1 1/3 mm. but he admits that this amount is too small because it represents only the distance of the optical image of the anterior and posterior lens-pole. After reduction, the real distance is found to be nearer 3 mm. than 2 mm. The transverse section of the lens focussed for distance as represented by Tscherning is wrong, even if the curves of the anterior and posterior surfaces are sketched only diagrammatically. The lens is not rounded at the equator but sharp-eved. He quotes Tscherning as having stated: It is asserted that the lens trembles owing to relaxation of the zonula as assumed by Helmholtz, but no one has, to my knowledge, seen that the reflex image of the anterior lens-surface ever trembles." and confutes this by the statement that in his case of aniridia the lens moved in toto; the tremor was observed in the sharp equatorial diameter. in the posterior, and in the anterior polar cataract. order to obviate the possible objection that after all the tremor may be confined to the intracapsular mass of the lens, he has recorded a case of iridectomy for optical purposes. Within the area of the artificial coloboma, a small deposit of uveal pigment was visible on the anterior surface of the anterior lens-capsule. During eserinization this pigment mark trembled with the lens. Thereby proof is given that also Tscherning's latest hypothesis-according to which, during accommodation the anterior lens capsule becomes taut and fixed through increased tension of the zonula, while simultaneously the posterior capsule becomes relaxed—is wrong and contradicts actual facts.

S. H. B.

Stereoscopic Treatment of Squint.

FERGUS, A. FREELAND, Glasgow (Ophthalmic Review, December. 1904), in considering the treatment recommended by Worth for squint in childhood, states that he has tried it for a period of fully one year and when intelligently carried out by the patient's guardians he has found it to be entirely satisfactory. He further states that in the treatment of such cases at so early a period of life the use of stereoscopes of Worth's amblyoscope can in the nature of things play little or no part. It is to be remarked, however, that certain of Worth's figures, particularly the cage and the bird, are quite available for children of about three or four years of age. Worth also finds that his figures consisting of circles can be used with advantage. When these are viewed through his instrument the observer has the idea that he is looking either at the outside or inside of a tube, and Worth's experience is that even a very young child with binocular vision can indicate at which of the two he is looking. In speaking of patients at a more advanced period of life, Fergus notes that it is possible for a person to have two excellent eves and although there be no squint, still have not binocular vision in so far as he has no perception of the third dimension. This. he thinks, is a probable explanation of the following observation: Suppose we are testing a patient's form sense by means of Snellen's distance types. Let us further suppose that we are testing the right eve and that a blinder is in front of the left. The patient may be able to see all the letters with the right eye. It sometimes happens that on removing the covering and placing it in front of the eve which has just been examined the patient forthwith states that he is unable to see any of the letters and that his right eye is now quite blind. He is once more able to read the letters on his attention being called to the fact that he can do so with his left eve. This will happen notwithstanding that the left eye is open and that its vision is excellent as measured by Snellen's scale. In other words, some persons seem to have the power of being conscious of impressions coming from one eye. They appear to have the power, where both eyes are good, of disassociating the vision due to the one from that of the other. The truth is that cases of this kind undoubtedly occur in which there

is no squint: probably they are to be explained by the absence or diminution of the power of fusion and by a parallel anatomical position of rest. Patients who are improved by stereoscopic exercises are, firstly, all young children who are capable of recognizing such test objects as are supplied with the amblyoscope. Carefully conducted exercises with the proper use of a bandage, in his experience, invariably out such cases Should the squint be alternating, then each eve must be alternately excluded from the act of vision for a period of about three or four hours daily. If, however, it has already been established in one eye, then the eye which is habitually used for fixation should be carefully bandaged for several hours each day. Secondly, the stereoscope is of great use when the squint has not appeared till a rather late age. He is not sure that here it gives such brilliant results as it does in early childhood, but still it has a marked effect. It certainly is of great use as an adjunct to operative interference. although for this purpose he prefers the plastograms, so-called. Lastly, the stereoscopic exercises are of immense value in treating the various forms of lateral heterophoria. In the application of the stereoscope. Fergus remarks that the ordinary picture stereoscope is not available, because when the patient looks through it, the examiner has no guarantee that the patient has the sense of perspective and distance. He has found those colored pictures called plastograms to be superior to anything else as a test of binocular vision and as a training in stereoscopic exercises. They are constructed as follows: Two nearly similar pictures are printed on the same piece of paper with only a slight space intervening between them. One of the pictures is of a reddish and the other of a greenish color. A piece of red glass is placed in front of one eye and a piece of green glass in front of the other. If a person have binocular vision, the two pictures are at once combined into one and a stereoscopic effect is obtained. If a patient who has binocular vision and has received on trial this stereoscopic impression, then moves his head on his body from side to side. he will at once find that the objects in the foreground of the picture also move from side to side relatively to those in the background. If the movement be present, the patient has binocular vision, if it be absent, he has not. An ordinary stereoscope shows somewhat similar movements, but the advantage of the color stereoscope is that it enables us at once to ascertain which eve the patient habitually employs for purposes of

fixation. The patients are directed to use the apparatus for a period of twenty minutes at least twice daily. S. H. B.

Origin of the Vitreous.

CIRINCIONE, Genoa (Ophthalmic Review, December, 1904). in a review of the present views regarding the origin of the vitreous, quotes in detail those of Kölliker and other eminent histologists. In an early work Kölliker recognized only two possible ways of origin for the vitreous, the one ectodermic provided by the retina, and the other mesodermic. Cirincione states that we are to-day still far from seeing everybody relieved of such contradictions. He has, however, contributed some observations which have to some extent assisted in their elimination. He noted in 1894 the existence of a mesodermic layer between the primary optic vesicle and the ectoderm which entirely disappears before the lens comes to lie in the secondary optic vesicle. This has since been confirmed by Kölliker. The importance of this is realized when one remembers that from this interposing mesodermic layer, the mammalian vitreous was supposed to be developed, while in birds or other vertebrates lower down in the scale, the vitreous was thought to be derived by transudation from the vessels. Having shown that the interposing mesodermic layer disappears in mammals before the lens is developed, one is able to establish a harmony between the different classs of vertebrates, as there is no further necessity to hold different views as to the development of the vitreous in one class and in an-This observer also demonstrates the perilenticular mesodermic covering of mammals by means of carefully prepared microphotographs. In 1894 he described a substance filling the incipient secondary vesicle which he held was not vitreous, but a provision substance which was later replaced by the vitreous. This he designated later as a retinal or lenticular product. Hence the vitreous derived from the visual part of the retina disappears to give place to the permanent vitreous, which, Kölliker holds, comes from the retina ciliaris and from the mesoderm. In conclusion Cirincione states that it follows from what has been said in this paper that the origin of the vitreous from the visual retina has never been given up, and that the supporters of its ectodermic origin have supported the lens and the orbiculus ciliaris at the same time others have considered the mesoderm and ciliary part of the retina as the seat of origin of the vitreous, and it is therefore to be hoped that further research will render the mesodermic origin which he supports, in consequence of his researches throughout the whole vertebrate class, acceptable to all.

S. H. B.

Diabetes and Cataract Extraction.

DOYNE, R. W. (Ophthalmoscope, December, 1904), gives the following interesting clinical history of a case. A male patient, aged 77 years, who suffered from diabetes mellitus, having had a preliminary iridectomy performed two years previously underwent extraction of cataract and died from diabetic coma thirteen days later. Three days after the extraction he became rather drowsy and gradually got worse. Notwithstanding this, the eye that had been operated upon made a perfect uninterrupted recovery, and the notes on the day of his death state that the wound was soundly healed and the eve was quiet.

S. H. B.

Keratitis Profunda.

SPICER, W. T. H. (Ophthalmic Review, January, 1905), in discussing this subject states that many cases of interstitial keratitis are encountered in which no trace or history of syphilis, congenital or acquired, can be obtained; in which the local changes resemble each other but in which the causes vary greatly, or cannot readily be discovered. He has collected 54 such cases in which the observations have been fairly complete and continuous, and it appears to him that this disease stands out as a distinct clinical entity. Of the 54 cases, 34 occurred in males and 20 in females, the difference being accounted for by habits and occupation, chiefly by the greater liability to injury in the males and by their greater addiction to alcohol. The occupations were various and did not permit of deductions being drawn from them. The average age was 40. Nearly all the most acute cases occurred in those addicted to the use of alcoholic beverages. Excessive eating was less readily detected, but it was clearly present in some cases. combined with over-drinking, especially of beer. Nine patients had typical gout, some others were subject to rheumatism or rheumatic pains, one to sciatica. Disturbances of the intestinal tract, fecal retention, or chronic constipation with indigestion were present in seven cases; carious teeth or pyorrhea alveolaris were found in four cases; dysentery was present in two cases; four of the cases occurred just before or after the termination of pregnancy. Some patients were broken in health or prematurely old, ill-nourished, with blueness of the extremities, with defective circulation or were the subjects of chronic bronchitis. There was a small number who were in good health, but who possessed a strong family history of gout. Seven cases seem to have been actually started by an injury such as an abrasion, a slight blow, or a foreign body. The duration of the disease was noted in 45 cases: it was reckoned from the first appearance of the symptoms till the disappearance of all congestion. The average time was three months, the slightest case lasted three weeks, the longest 12 The duration of the opacity was of course much The right and left eves were each affected 27 times. longer. and both eves were involved five times. Concerning the final termination, he states that in nine cases the final result was 6/6. in two it was 6/9, in one it was 6/12. Judging from the amount of opacity present in a number of these patients, more or less permanent damage was certain but in the less severe cases, the prognosis is good. In describing the local changes, Spicer states that moderate ciliary congestion comes on soon after the first complaint of dimness of sight; it is generally dusky in color and rarely severe. Quite early, in the first few weeks, especially in the cases beginning at the edge of the cornea, blood-vessels spring from behind the scleral edge, and run toward the center of the cornea, but they can be seen as separate vessels. The opacification of the cornea takes one of two forms—the central disk and the peripheral cone. The disk opacity occurred in 25 cases, the conical form in 22; in a few cases the two kinds were mixed. A detailed description of these forms is given. Very soon the striation disappears or is hidden by the increasing opacity of the cornea just in front of it. The actual opacity occurs either as a uniform layer or as a number of delicate gray maculae situated in the deep layers. These maculae are to be distinguished from deposits on the back of the cornea by their color grey, as distinguished from vellow, and by their having a less sharply-defined edge; as the disease progresses the maculae increase in number and size, and unite more or less into one grey layer. In the peripheral form, as the uniform grey layer advances over the cornea, it is often headed by a skirmishing line of grey maculae. Edema of the cornea is almost always present. Fluorescin may be employed to detect the corneal changes. The staining is most readily obtained in the central disk form. In 34 cases, iritis was not present, that is, the pupil dilated quite easily and well with one application of atropia and left no pigment on the lens. Iritis was present in 14 cases. Tension was raised in 4 cases. In only one case was there any fundus change observed. The pathology of keratitis profunda is given in detail. In treatment he mentions the use of hot fomentations, atropin, complete rest of both eyes and protection from light. In the few cases in which tension is raised, atropin should be used only with caution and where the patient may be kept under observation. Eserin may be used tentatively in such cases. Paracentesis and iridectomy may at times be required. Peritomy was done in one case without benefit. He considers subconjunctival injections of cyanid of mercury. 1 in 500 harmful in the acute stage and unnecessary in the later stages. Saline injections are of no benefit. Dionin, he has found to be of no value. General treatment is of most value. Attention to the gastro-intestinal tract is especially beneficial. S. H. B.

Eye Socket For Use in Demonstrating Ocular Operations.

HARMAN, N. B., London, (Ophthalmic Review, January, 1905), has devised a simple apparatus for demonstration purposes when the ordinary appliance is unavailable. He describes its construction as follows: "From the hospital dispensary a cupboard box 4 in, by 3 in, by 11/2 in, was secured and from the store a bar of vellow soap. A slab of the soap was cut to fit within the box. A hole about the size of a palpebral fissure was cut in the lid of the box, and a 'socket' scooped out from the block of soap immediately below the position of the hole in the box lid. The wet eve was put into the soap-socket, covered with the lid and the lid secured in position by a couple of elastic bands. The slippery, soapy surface allowed of free mobility of the eve, so that the handling of fixation forceps and cutting instruments was as nearly as possible akin to that required on the living eye as possible." S. H. B.

An Adjustable Stereoscope for Training the Fusion Sense.

RAMSEY, A. M., Glasgow. (Ophthalmoscope, January, 1905), describes a modification of Worth's amblyoscope. The new instrument stands securely on a table, and the substitution of total-reflecting prisms for mirror prevents the confusion arising from the formation of double images. There is a strongly-made frame containing the pictures, prisms, and lenses, provided with rack and pinion movement for adjustment to any pupillary distance. Photographs are appended to show the general appearance of the instrument. The pictures which are colored and of a simple kind are dropped into slots one near the outer end of each arm, and so placed that the picture lies at the focus of the lens. Behind each picture is a small electric lamp supplied with current by wires passing in underneath and

controlled by a sliding bridge resistance to permit of varying the degree of illumination. While resistance is taken from the circut of one lamp, and the brightness of the light thereby increased, additional resistance is thrown into the circuit of the other with a corresponding diminution of its brilliancy.

S. H. B

Hydatid Cyst in the Anterior Chamber.

Evans. Thomas. Australia. (Ophthalmoscope. Ianuary. 1905), records a case of this character occurring in a girl six years of age. When first brought under his observation the condition had been in existence two months. Floating in the anterior chamber of the left eve occupying the pupillary space was a cyst, pearly in appearance and apparently unattached. On its anterior surface near its edge were two minute black points; its diameter was from 3 mm. to 4 mm. It was in contact with both the cornea and lens and underwent changes in shape during accommodation. From time to time it made rotary movements. It appeared to be structureless and a pale reflex could be seen through it from the fundus. The cyst was removed and subjected to a microscopic examination which served to establish the diagnosis of an immature hydatid cyst.

SHR

The Opthalmo-Kinetograph, an Apparatus to Record Ocular Movements.

COBURN. EDWARD B., M. D., (Archives of Ophthalmology. January, 1905), describes a modification of an apparatus devised by Prof. Raymond Dodge for recording ocular movements. By its use all forms of these can be studied, especially the consensual, including convergence, as well as the physiological functions, such as the reaction time for various muscular actions, and such variations from the normal as insufficiences, and nystagmus. In Prof. Dodge's apparatus, as well as in a similar machine invented by Dr. Lucien Howe, a timemarking device is used, but Coburn casts this aside as an unnecessary refinement. M. L. F.

Ophthalmic Subjects Treated of In the Code of Hammurabi. OLIVER, C. A., after a perusal of the translation of the code of Hammurabi (Archives of Ophthalmology, January, 1905), has gathered together what ophthalmic data it contains so that they may be accessible to ophthalmologists without the neces-M. L. F. sity of searching the original.

Optic Neuritis During Lactation, Including a Reference to Other Ocular Conditions Observed in this Period.

DERBY. GEORGE S., (Archives of Ophthalmology, January, 1905), reports the case of a healthy primipara, 25 years of age, who came under observation seven weeks after confinement. She had nursed the baby and had noticed for two weeks that the sight of her left eye was failing, but during the last four days its vision had diminished rapidly. Examination showed R. V. 6/6; L. V. fingers at 2 meters. The pupils were of equal size and reaction. The left cornea, iris and transparent media were normal. The left optic disc was somewhat hyperemic, the veins engorged, the disc outlines slightly blurred. Colors could not be recognized with this eve and the was contracted. Simulation tests gave negative results. patient was seen again thirty-three days later. She stated that her vision began to improve a few days after her first visit and in three weeks she thought she could see equally well with either eye, but during the last few days the right eye seemed to have failed. Examination showed R. V. 6/12, slightly improved by +.50 cvl. axis 90°. Field and color vision normal. L. V. 6/6, field normal, color vision good. Nothing pathological to be seen in either fundus. M. I. F.

Presbyopia at an Early Age. Astigmatic Accommodation Under the Influence of Eaerin.

KOSTER, G., (Archives of Ophthalmology, January, 1905), reports the case of a man 27 years of age whose refraction was R. 6/8; 6/6 with +.75 cyl. ax. 3° temp.; L. 6/6 emmetropia, but whose near point was at 25 cm., even with one eve covered. He had an amplitude of accommodation of only 4 dioptres instead of 7.5 which corresponds to his age. Latent hypermetropia was carefully excluded. This condition persisted during an observation of twelve months. Eserin placed in the left conjunctival sac at first caused the pupil to become oval and displaced upward. At the end of half an hour the pupil was contracted and circular. At that time the voluntary accommodative effort made in that stage of the spasm caused by the eserin was able to contract the ciliary muscle so strongly as almost to reach the normal amplitude. The explanation suggested is that during contraction of the normal ciliary muscle an abnormal resistance was met with which could not be overcome by the usual innervation alone, but could be with the aid of eserin.

During the action of the eserin in this case observations were

made of the refractive changes which took place, and it was demonstrated that the eserin produced at first a symmetrical contraction, but later an unsymmetrical one. At the end of fifty minutes 2.50 dioptres of astigmatism were present and astigmatism persisted, though gradually diminishing until the effect of the drug had passed away.

M. L. F.

An Experimental Study of the Healing of Perforating Incised Wounds of the Cornea.

WEINSTEIN (Archives of Ophthalmology, January, 1905), draws the following conclusions from his experiments on rabbits:

- "1. After perforating incised wounds of the cornea regeneration does not take place simultaneously in all parts, but the epithelium is first restored, then the true corneal tissue, and finally Descemet's membrane.
- "2. The epithelium is regenerated through an active proliferation, as shown by the presence in it of segmentation figures over the whole surface of the cornea.
- "3. This proliferation begins immediately after the receipt of the injury, reaches its maximum in three or four hours, then gradually decreases and disappears about the end of the first day.
- "4. Mitoses appear first on the surface of the cornea at a considerable distance from the wound, but after three hours they are to be found in its immediate vicinity.
- "5. After four hours mitoses appear in the epithelium which has sunk into the wound.
- "6. There is no evidence of an ameboid movement of the epithelium toward the wound, or of a direct division of the epithelial cells.
- "7. Ranvier's theory is untenable; the evidence he adduces is weak.
- "8. After the regeneration of the true corneal tissue the epithelium is gradually pressed forward out of the wound and the superflous portion dies away.
- "9. This necrosis takes place both on and beneath the surface of the epithelium and involves both single cells and entire groups. The process by means of which this is accomplished remains unexplained.
- "10. In most cases the epithelium in the region of the scar remains considerably thicker than normal, because of an increased number of rows of the middle polyhedric cells and a considerable elongation of the basal cells.

- "11. This thickening of the epithelium is doubtless useful in compensating partially, even if not entirely, for the disturbance of the corneal curvature, which results unavoidably from the cicatricial contraction.
- "12. The healing of aseptic, uncomplicated, central wounds of the cornea takes place, at least in rabbits, with no inflammatory symptoms, no cloudiness of the cornea, vascularity, or signs of irritation.
- "13. The cornea propria is regenerated wholly through active multiplication of its own elements. In all probability leucocytes takes no part therein.
- "14. Mitoses first appear in the cornea propria four to six hours after the operation at a considerable distance from the wound; but the importance of this fact is uncertain, because of their inconsistency and small numbers.
- "15. Cells undergoing indirect segmentation in the cornea propria are to be seen immediately about the wound after two days.
- "16. Granulation elements appear in the wound after the lapse of three days, and multiply rapidly by mitotic segmentation.
- "17. The anterior portion of the wound becomes completely filled with granulation tissue at a time when the posterior portion is still occupied by fibrin.
- "18. The fibrin which fills the wound participates only passively, not actively, in the process of healing.
- "19. The regeneration of the endothelium occurs simultaneously with that of the true corneal tissue, wholly through mitotic segmentation.
- "20. Descemet's membrane is completely restored after a perforating wound of the cornea. This restoration takes place at a period considerably later than that of the other layers.
- "21. Its first appearance in rabbits is in the fourth week, and it attains an almost normal thickness after four months.
- "22. The new Descemet's membrane cannot be distinguished from the old either by its appearance, or by its staining.
- "23. The cuticular theory of the formation of Descemet's membrane is an arbitrary assumption which does not accord with its anatomy or embryology, in favor of which no one has adduced convincing evidence.
- "24. Descemet's membrane is produced by the physiological hyalinization of the limiting lamella of the true corneal tissue, probably through the influence of the aqueous. This theory accords with the anatomy and embryology of the membrane,

as well as with the observations made of its formation in pathological conditions.

M. L. F.

Flat Sarcoma of the Chorioid (Endothelioma). Death One and a Half Years Later from General Metastases.

KNAPP, A., (Archives of Ophthalmology, January, 1905), reports this case. The patient was a female 27 years of age. The diagnosis of sarcoma of the chorioid was made March 30, 1903. The eye was enucleated October 24, 1903, when in a condition of acute glaucoma, and the patient died from inanition due to metastases eighteen months later. In the eye was a tumor which had diffusely infiltrated the chorioid and ciliary body in one-half of the eyeball; had infiltrated the sclera more or less, so it was perforated at one point; had a maximum thickness of 1 1-3 mm., and had the microscopic characteristics of an endothelioma. A striking feature of the tumor was its deficiency in blood-vessels. The retina was not detached, but was generally adherent with inflammatory changes. M. L. F.

Meduliated Nerve-Fibres in the Retina.

MAYERBERG. (Archives of Obhthalmology, January, 1905). after a microscopical study of three eyes in which medullated nerve-fibres had been observed during life, inclines to von Hippel's view that the presence of these fibres is not a congenital anomaly, but is one which appears in eyes congenitally predisposed thereto. In almost all cases other congenital deviations from the normal are present. In the three cases described the retina was rudimentarily developed in the region of these fibres, and in one there was a duplicature of the retina at the margin of the optic nerve. There was also a growth of connective tissue on the internal limiting membrane which perhaps holds the same nutritive relation to the medullated nervefibres in the retina that the connective-tissue sheaths of the bundles of fibres holds in the optic nerve. The presence of this connective tissue is congenital and in its peculiar association with the medullated fibres may be found the congenital predisposition to the development of the latter. M. L. F.

Some Observations Upon the Non-Operative Treatment of Squint: The Worth Amblyoscope.

Posey, William Campbell, M. D., and Langdon, H. Maxwell, M. D. (New York Medical Journal and Philadelphia Medical Journal, December 3 and 10, 1904.) These writers present the notes of eleven cases of squint in which detailed

study and prolonged observation were possible. In two of these a perfect fusion sense was present although there was a convergent squint whenever the glasses correcting a high hypermetropic refractive error were removed, and although there was a certain amount of amblyopia in the deviating eyes.

From a consideration of the facts brought out by a study of these cases, as well as from observations which were made from other cases which could not be utilized for statistical purposes, the writers desire to call attention to the following:

- 1. The amblyoscope, to be of service in establishing binocular vision and removing the squint, must be employed in
 early childhood, preferably before five years of age. The
 writers agree with Mr. Worth in his statement that it may be
 used in children as young even as three years of age. Upon
 account of the extreme youth of these subjects, information
 regarding the amplitude of convergence cannot, of course, be
 obtained, the lessening in the angle of the squint and the improvement in vision in the squinting eye, as obtained by the
 ivory ball test, alone giving evidence of the benefit which is
 being derived from the treatment.
- 2. It is possible (as shown by Cases X and XI) to have good amplitude of fusion, while the squint still persists; such being the case in eyes where, notwithstanding the development of a perfect fusion sense, the eye still maintains a position of convergence, either by reason of some structural peculiarity, such as a faulty insertion of a muscle, or a palsy of an antagonist, or perhaps a contraction of the internus itself following a squint of long standing.
- 3. Vertical deviation in the images occurs in quite a large proportion of cases and of the nine recorded, took the form of a hyperphoria of the squinting eye in every case but one. This observation seems to have escaped Mr. Worth's attention, as he nowhere refers to it.
- 4. It should be remembered that the amblyoscope is an instrument to develop the fusion faculty and not to develop the visual acuity, any improvement in vision being secondary to the development of the fusion faculty and the increased use of the eye in its participation in binocular vision.

The writers take exception to a disparaging statement in regard to prismatic exercises of the muscles made by Mr. Worth, as they claim that when properly performed such exercises will relieve the symptoms of many cases of muscular asthenopia and exert an effect on the extra-ocular movements, particularly on adduction. Another exception is taken to Mr. Worth's

statement that in cases in which the squint dates from infancy. where the refraction of the eyes is as a rule normal, and where the fusion faculty is absent, the treatment is not satisfactory. and three cases are quoted in which the operation had to be performed as a first step and fusion of the images was obtained later by the use of stereoscopic and prismatic exercises. The ages of these three patients were 18, 11 and 23 years, which disproves Mr. Worth's statement that while binocular vision of a sort may in exceptional cases be acquired as late as eight or nine years of age, it is so feeble that it is powerless to maintain the normal relative deviation of the eyes in the presence of uncorrected hypermetropia: so that glasses must be worn through life to prevent a return of the deviation. The writers believe that Mr. Worth has performed a real service to humanity by insisting that if the treatment of squint is to be efficacious, it must be inaugurated early, and carried on actively. They believe the amblyoscope to be an instrument of great value in training binocular vision, and sincerely trust that it will form part of the equipment of every ophthalmologist. Contrary to the impression one may at first obtain of it, the instrument is easy to use, and does not demand a great deal of time in its employment.

In common with Worth, the writers would insist upon the importance of instilling atropin into the non-squinting eye only. It is the custom of many to instill drops into both eyes: while this procedure, by paralyzing the ciliary muscles, relieves the faulty association which exists between accommodation and convergence in hypermetropic eyes, and frequently straightens the visual axes, it does nothing more, the vision in the squinting eye not being benefited thereby.

The writers are fully in agreement with Mr. Worth as to the advisability of fitting the subjects of squint with glasses, but doubt the expediency of doing this at such a tender age as he mentions, i. e., seven weeks, for they fear that the pressure which might possibly be exerted by the spectacles on the bones of the face, and in cases of faulty adjustment upon the eyeballs themselves, might cause changes which would be most deleterious and interfere with the proper development of these structures.

The writers have in several instances prescribed glasses at three years of age and have noted nothing but beneficial results therefrom. As this is the age at which Mr. Worth agrees it is proper to begin training the fusion faculty, it would appear fitting to make it also the proper time to give squinting children their correction.

M. L. F.

Poisoning by Wood, or Methyl Alcohol and its Preparations as a Cause of Death and Blindness: A Supplementary Report.

WOOD, CASEY A., Chicago, (New York Medical Journal and Philadelphia Medical Journal, January 7, 1905), rehearses the account of the poisoning of sixteen people in Russia by wood alcohol as related by Stroehmberg. The beverage used was Kuntzen's balsam. No samples of the particular balsam drank could be obtained for analysis, but the estimated amounts of wood alcohol ingested were small. The characteristic symptoms were present in all. Thirteen died, eight within 24 hours. three became blind. Thirteen autopsies were held and Stroehmberg was much impressed by the uniformity and striking clearness of the picture presented by the lesions. The histories of several American cases follow with a discussion of the change of character undergone by wood alcohol of commerce in recent years whereby it has lost its disagreeable taste and odor. In regard to the prevention of methyl alcohol poisoning he says:

"Whenever a government permits the sale of deodorized wood alcohol (as in the case of Columbian spirits in the United States and of standard wood spirits in Canada) the only effective safeguards (the offensive odor and taste) against ingestion of the poison are removed and the annual sacrifice to death and blindness will certainly continue. Either the manufacture and sale of deodorized or purified wood alcohol should be absolutely prohibited, or, as in Germany and Great Britain, an untaxed ethyl alcohol, or one rendered undrinkable by the additional of mineral oil, wood spirit, naphthalin, or some other nauseous compound, or both, should be allowed for use in the arts in the place of Columbian spirits and similar dangerous preparations.

The fact that the annual consumption of millions of gallons of cheap alcohol in other countries has been going on for years without fatal consequences, while in America we have had hundreds of deaths and cases of blindness from the employment of an agent that possesses no advantages over methylated spirits, or *Brennsspiritus*, is surely an unanswerable argument in favor of this proposal."

M. L. F.

On Rubidium Saits, with Special Reference to the Use of Rubidium lodid in Optic Atrophy.

BARTHOLOW, New York, (New York Medical Journal and Philadelphia Medical Journal, January 21, 1905), gives a brief description of rubidium and the theoretical considerations which caused Bunge to recommend it in a general way in the treatment of eye diseases. The writer has tried it on a patient with tabes and optic atrophy, but his observations as recorded do not show whether a very slight improvement was really gained or not.

M. L. F.

Binasal Hemianopsia: A Case of Neuritic Optic Atrophy with Binasal Hemianopic Fields.

SHOEMAKER, Philadelphia, (New York Medical Journal and Philadelphia Medical Journal, February 4, 1905), believes that in most cases the so-called nasal hemianopsia is a symptom of optic-nerve disease and protests that such a diagnosis is purely symptomatic and should be discarded. After a collation of 18 cases the writer adds one from his own observation. The patient was suffering from diffuse arterial sclerosis and presented no distinct signs of involvement of the brain or spinal cord aside from the disturbance of the visual fields. Ophthalmologically the case was one of optic atrophy following or attended by a low grade optic neuritis.

M. L. F.

ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

RV

WILLIAM T. SHOEMAKER, M. D.,

PHICADELPHIA.

WALDEMAR E. FISCHER, M. D.,

SAINT LOUIS,

AND

CLARENCE LOEB, M. D.,

SAINT LOUIS.

Eusemin.

COHN, PAUL, Berlin, (Wochenschrift für Therapie und Hygiene des Auges, November 24th, 1904.) Eusemin is a cocain-adrenalin mixture, consisting of cocain 1 per cent., adrenalin solution of the usual strength, chloreton and physiological salt solution. It has been extensively used in dental surgery by Rosenberg and Wohlauer of Berlin, with very satisfactory results. Used in the form of injections up to 3 cc. m., anesthesia was in most cases immediate, and in a few in about 5 minutes.

In this mixture cocain is effective in weaker solution than when used alone; the diminished absorption caused by the adrenalin, renders the local anesthesia less toxic, but more profound and of longer duration.

Cohn has experimented with eusemin in a great many cases of eye disease. Good results were obtained in operation upon the lids and conjunctiva, such as the removal of lid cysts, cutaneous horns, conjunctival cysts and chalazia.

Particularly useful was it in excising chalazia. Injected slowly into the everted lid through the conjunctival surface,

the operation was painless, there was no hemorrhage, and there were no unpleasant after effects.

H. T. S.

Parenchymatous Keratitis Following Scarlatina-Diphtheria.

WIEGMANN, Hildesheim, (Wochenschrift für Therapie und Hygiene des Auges, November 24,1904.) This case was that of a 7-year-old boy of healthy parentage. He contracted scarlatina and diphtheria, and was treated with serum injections. Five weeks after onset the cornea of each eye became hazy, the condition gradually increasing until 8 days later vision was reduced to hand movement at 2 m. Syr. ferri iodid., hot applications, and the massage with a mild mercurial ointment, produced a rapid clearing of the cornea, which in 8 weeks was complete.

W. T. S.

Ophthalmoplegic Migrain.

RYBA, Prague, (Sbornik Klinicky Bd. IV H. 5. Ref. from Wochen. für Therapie und Hygiene des Auges, November 24th, 1904.) Ryba cites two cases. The first was a female 23 years old without hereditary nervous disease. The attacks had occurred at irregular intervals since her third year. They commenced with severe right-sided headache, reaching their height upon the second day, then gradually subsiding. At the same time the patient was seized with vomiting. The height of the attack the right oculomotorius seemed to be completely paralyzed.

The ophthalmoplegia continued for a longer time than the headache, and gradually recovered. In the earlier attacks the ophthalmoplegia recovered completely within a week. Since the 14th year, the recovery has been complete; the paralysis improves within a few days and, remains more or less stationary until the next attack when there is again total oculo-motor paralysis. Aside from the oculo-motor palsy, the patient shows during the attack no other pathological disturbances; no hyperesthesia, scotoma scintillans, aphasia, etc.

The second case was a man 53 years old, without hereditary disease, and without acquired syphilis. Has had the affection since his 10th year. At first the attacks of migrain occurred every 2-4 months; since puberty they have been less frequent. One attack was ushered in with scotoma scintillans, the other attacks were all uncomplicated migrain, until his 46th year, when the first time the left oculo-motor nerve became coincidently paralyzed. In the seven years following

he suffered three new attacks of ophthalmoplegic migrain. The last attack ended in partial recovery of the paralysis only. Of interest is the fact, that since the first attack of ophthalmoplegic migrain, the hair from his chest and from his head began to fall out, leaving spots of permanent baldness.

W. T. S.

Extirpation of the Lacrimal Sac.

Von Hymmen (Wittemb. med. correspondenz bl. 1904. No, 40; Ref. from Wochenschrift für Therapie and Hygiene des Auges, November 24th, 1904.) The indications for this operation are, according to Michel: 1—Dacryocystitis with stenosis of the naso-lacrimal duct, among the laboring classes, where more conservative measures are not suitable. 2—Dacryocystitis with complete long standing closure of the naso-lacrimal duct. 3—Dacryocystitis complicated with diseases or injury of the cornea. 4—Dacryocystitis with chronic conjunctival and lid disease. 5—Dacryocystitis in the fistula. 6—Ectasia and atony of the lacrimal sac. In the clinic at Tübingen, the operation is practiced without the previous injection into the sac of paraffin.

The incision is 2 cm. in length, curved convex toward the nose, beginning a little above the inner canthal ligament, and carried through to the bone. The nasal and in part the posterior wall of the sac is thus exposed. The sac is then carefully dissected out. The opening of the naso-lacrimal duct is curetted with a sharp spoon. The wound is closed with 3 or 4 stitches, and a compress bandage is applied.

From 1899 to 1904 the operation was performed 171 times, and in 19 cases upon both sides. The results were good in 144 cases or 84.2%. Good results were considered to be those in which the wound healed by first intention, leaving a smooth firm scar; no regurgitation upon pressure, and no disturbing epiphora.

Twenty-seven cases, or 15.8% were unsuccessful, i. e., there was delayed union, abscess formation, remaining fistula, regurgitation of secretion, or epiphora. The cause of failure in the majority of unsuccessful cases was attributed to faulty technique; the sac was not completely removed. Other cases, especially in young subjects, were unusual disease of the sac and its surroundings, and disease of the bone.

A table gives a classification of the cases with reference to the character of disease, age. sex, occupation, etc. A dividing line is made at the age of 25, in order to form some

judesment as to the results of the operation before and after and complete development.

The percentage of failure is much higher in the first 25 For sof life; thus 1-10 years, 65.3%; 10-35 years 23.1%. this reason the indications for the operation should be tional indications for the operation of the operation is advised.

te table shows that affections of the lacrimal sac are ively more frequent in middle life, and the prognosis extirpation is then more favorable. Females are much more often affected.

Regarding occupation, those engaged in rough laboring work are most exposed to lacrimal sac disease. Complication with serpiginous ulcer of cornea (15.6%) is found most requently among the peasant class.

Sub-Retinal Cysticercus.

N, H., (Allgemein. Medizin. Central. Zeitung—1904, Ref. from Wochen. für Therapie und Hygiene des S., December 29th, 1904.) Cohn presented before the Chlesischen Gesellschaft, a patient from the eye of whom he had removed a sub-retinal cysticercus 26 years before. The cysticercus occupied the macular region and was extracted through a scleral incision. Central vision has remained 3/36; no change has taken place in the position of the eyeball, its tension, motility, or its pupillary action. Light sense and color sense have been retained.

Cohn has seen 44 cases of ocular cysticercus among 100,000 patients. Thirty were sub-retinal, 13 were in the vitreous, and 1 was in the lens. He has made 13 extractions, 9 from under the retina, and 4 from the vitreous. Eleven were removed without injury to the cysticercus. Since 1890 Cohn has not seen a single case in 24,327 eye patients. W. T. S.

The Cure of Trachoma with Radium.

COHN, H., (Wochenschrift für Therapie und Hygiene des Auges, January 5th, 1905.) Cohn used a crystal of radium bromid, weighing 1 mg. which cost twelve dollars. He placed it in a thin glass tube 3 cm. long and 3 mm. in diameter, and cemented it. With this he touched every granulation and follicle in three cases of trachoma and follicular catarrh. The treatment lasted 10-15 minutes every day, and granulations which had been previously treated unsuccessfully with the usual painful remedies, disappeared in a surprisingly short time.

Three cases were quickly and painlessly cured, but no certain conclusions can be drawn from such a small number.

Cohn recommends the further trial of radium to those in a position to treat many cases of trachoma. W. T. S.

Aristol, in Olly Collyrium, as Used in the Treatment of Certain Eve Diseases.

Daxenberger, F., Wochenschrift für Therapie und Hygiene des Auges, December 8th, 1904.) Daxenberger has found that, in general, and better tolerated than are watery solutions. less irritating, and better tolerated than are watery solutions. Mild antiseptics in combination with oil were found to be especially efficacious. Aristol acts particularly well in such combination, because it is quite soluble and somewhat anesthetic. A 10% solution of aristol in "sesam oil" is used. Dropped in the normal eye it causes no burning or unpleasant sensations.

In cases of superficial inflammation such as blepharo-conjunctivitis, superficial corneal ulcers, etc., the pain is quickly relieved, and there is generally a diminution in the swelling, redness, and the amount of secretion. Other inflammations such as iritis, cyclitis, retinitis, etc., are not influenced by aristol-oil. Injury to the corneal epithelium from its use has never been observed.

Daxenberger has used aristol-oil with favorable results in the following eve diseases:—1—In all inflammatory affections of the lids. The different forms of blepharitis, after the diseased cilia have been removed, and the scales and crusts have been cleaned off preferably with No. Oo. To ally the pain, after burning of the lid, from the use of the thermo-cautery. or caustic measures. In these conditions, better results were obtained from the aristol-oil than from the usual ointments. 2-In the early stages of phlyctenular conjunctivitis and keratitis, before stimulating remedies (calomel and vellow ointment) are well borne. The annoying blepharospasm in these cases is relieved, and often completely disappears within a day or two. It is of great service locally applied in the treatment of the eczema of the face and head, so common in scrofulous subjects. 3—Epithelial erosions and superficial ulcers of traumatic nature, yield with great promptness to aristol-oil. and a compress bandage. Daxenberger has not used it in the treatment of deep ulcers. 4—Lime burns of the conjunctiva and cornea present strong indications for the use of aristoloil; not only is the pain controlled, but the dangers of adhesions and corneal opacities are greatly lessened. W. T. S.

Paralysis of the Right Superior Oblique Muscle, Anesthesia of the Left Side of the Face, Acquired Central Nystagmus and Vertigo—Recovery.

VOLLERT, Leipsic, (Muench. Medizin. Wochen., November 7th, 1904.) This case was a female 32 years old. Vision and fundus were normal for each eye. The diagnosis is nuclear large paralysis of the 4th nerve right side, due to a gumma infiltration in and around the nucleus, with concurrent policence of alitis hemorrhagica and basal meningitis of syphilitic original Lesions of higher centres above the nucleus are except by the fact that they never cause paralysis of a single neuron less than the cortical centre for the 4th is unknown. Against peripheral paralysis following the neuritis, are the nystagmus and the vertigo.

nerves, without question could be accounted for by a in the middle cerebral fossa. For the involvement of right trochlearis and the left trigeminus, the hypothesis is offered that the lesion is in and around the 4th nerve nucleus, and extends into the dorsal longitudinal bundle in which are fibres for the middle root of the trigeminus of the opposite side.

Isolated paralysis of the 4th nerve has been observed by Schwarze due to suppurative middle ear disease, and by Bernheimer due to empyema of the frontal sinuses. W. T. S.

Amblyopia Exanopsia and its Relation to Strabismus.

KEHR, FRITZ, (Inaugural Dissertation,, Strassburg. Ref. from Wochenschrift für Therapie und Hygiene des Auges, December 8th, 1904.) Kehr examines the several theories relating to the subject, and divides the authors into three classes.

The first class includes those who believe that the amblyopia follows and results from the strabismus (A. von Graefe, Donders Javal, Grünfeld.) Those of the second class consider the amblyopia in part the cause and in part the result of the strabismus (Alfred Graefe, Schweigger, Silex.) Under the first and second class, the amblyopia can, by suitable treatment, be improved; under the third class it is incurable.

Kehr believes that the strabismus is a result of the amblyopia, and that improvement in vision of the amblyopic eye is not possible. Many well studied cases are cited and arranged to demonstrate this.

W. T. S.

Asthenopia-Eyestrain,

OHLEMANN, Wiesbaden, (Wochenschrift für Therapie und Hygiene des Auges, December 15, 1904.) Ohlemann discusses the definition and application of the word eyestrain as used in English and American literature, and in German literature. In Germany, the subject is considered not from the standpoint of the eyestrain, but from that of the consequences of eyestrain. As these are frequently exhaustion and weakness, the word asthenopia would seem to better define the condition.

Reference is made to a recent article by Dana upon "Eyestrain and the Psychoses." In this article the term eyestrain is used in two classes of affection. In the first, there is an automatic excess of work (strain) put upon the midbrain, or oculo-motor nerves, due to refraction, accommodation, or muscle-anomalies. This is a genuine eyestrain, not involving the higher centres. In most cases it is sub-cortical, and is a kind of "spinal eyestrain." In the second class, are cases in which the eye is seriously damaged, or the receptive centres in the brain are exhausted. The cortical centres are then involved. This kind of eyestrain is really more of a "brain-strain."

Ohlemann believes it very improbable that eyestrain is an important and direct factor in the production of even the minor psychoses, but that it does modify the symptoms very much, and secondarily greatly increases the disturbances.

In hysteria, for example, paralysis of the ciliary muscle can cause micropsia, spasm can cause macropsia, and certain disturbances of the accommodation can even cause polyopia.

Reference is also made to a contribution by de Schweinitz, "Concerning Certain Cases of Asthenopia and Eyestrain which are Independent of Refractive Error and Muscular Imbalance."

Altogether "eyestrain" is used to explain so many conditions, some of them so totally different and far removed, that Ohlemann believes the word asthenopia, which means "weakness," is in every case preferable.

W. T. S.

The Prophylactic Use of Mercurial Inunctions in the Treatment of Injuries of the Eye.

HEDDAEUS. (Wochenschrift für Therapie und Hygiene des Auges, December, 22nd, 1904.) The use of mercurial inunctions in cases of pronounced sympathetic ophthalmia is well known. Schirmer has shown that they also act very favor-

ably when promptly and energetically used, in cases of perforating injury of the eyeball.

The favorable action of the mercury could be better understood, if it were an accepted fact that, besides the ectogenous virulence of an infectious injury, there was also an endogenous source of danger, due to the injury reducing the eyeball to the point of least resistance, and therefore making it in this way susceptible to diseased processes.

From infection comes suppuration which is not amenable to mercury. Heddaeus believes that suppuration in the eyeball, when not demanding immediate enucleation, is best treated by the open wound method. The wound should be opened daily, in order to prevent increased intra-ocular pressure, and to give the pus an opportunity to escape from the eyeball. At the same time, intra-ocular disinfection can be carried out by use of the cautery or by iodoform rods.

Symptoms of irritation not alone explicable by the severity of the injury, severe and long standing ciliary injection, discoloration of the iris, synechia, ciliary pain, etc., can follow alike infectious and non-infectious injuries, and perforating, as well as non-perforating wounds of the eyeball. The most frequent of all eyeball injuries, the foreign body, for example, can present all conditions varying from absolutely no irritation to severe ulcerative keratitis. It is certain that not only the nature of the foreign body is responsible for these variations, but also an important part is played by the condition of the patient.

The susceptibility of the patient to this irritative reaction to injuries, can, according to Heddaeus, as a rule be controlled by mercurial inunction. Inunctions are not recommended in cases of slight non-perforating injury, unless the usual local remedies fail, and there is reason to suspect some dyscrasia, in which case they should be at once used. Perforating wounds, on the other hand, threaten not only the injured, but also the uninjured eye. Mercurial inunctions are then to be used without hesitation.

W. T. S.

Xeroderma Pigmentosum.

ISCHERYT, (Medizin. Chirur. Centralblatt, 1904, No. 47. Ref. from Wochen. für Therapie and Hygirze des Auges, December 29th, 1904.)

Ischeryt reports a case of xeroderma pigmentosum with extensive changes in the eye and its adnexa which he observed for two years in a 10-year-old-boy. There were lesions of the

skin of the head and face, forearms, hands and breast; falling of the hair, scab formation, pigmentations, telangiectasis, and atrophy. The lower lids were ectropic (cicatricial); the lid margins were completely obliterated, and without cilia; the lower puncta lacrimalia were everted and swollen; there were bleeding granulations at the inner commissure of the right lid; injection of the bulbar conjunctiva, and pannus of both eyes. During a later stage, an ulcerating tumor developed upon the left upper lid. A tumor also developed in the right eye. Both tumors with a third in the skin of the face were removed, and were found to be small-cell carcinomata. The changes in the eyes were similar to those in the skin elsewhere. The corneal limbus is frequently the starting point for the tumor; the cornea generally becomes infiltrated, and later the seat of abscess or of pannus.

In one case Elschnig noted atrophy of the iris tissue analagous to the pigment atrophy of the skin. W. T. S.

A Case of Bilateral Evulsion of the Optic Nerve.

GARGARIN, St. Petersburg, (Klinsche Monatsblatter für Augenheilkunde, September, 1904.) Evulsion of the optic nerve is extremely rare, and only under favorable circumstances can it be observed opthalmoscopically. According to Salzmann, the most characteristic ophthalmoscopic sign is the complete absence of the optic papilla and its vessels. The papilla is torn out, and in its place is a hole filled with vitreous humor. The bottom of the hole or canal usually appears almost black, which is different in appearance from every other nerve excavation. The sign second in importance is a break in the continuity of the lamina cribrosa. This can vary from a tear or rent, to complete separation. Third, there is a break in the continuity of the retina. Salzmann found this three times, in eight cases. Fourth, anemia of the retina, and loss of visible vessels around the disk. The appearance of vessels later, and a return of the normal retinal color, are due to anastomosis. and no not discount the diagnosis of evusio nervi optici, unless observed sooner than 14 days after the injury. Fifth, there is immediate and permanent blindness.

Salzmann, in 1903, was able to find in literature but seven undoubted cases of evulsion of the optic nerve. Five cases were diagnosed ophthalmoscopically, in three of which the diagnosis was confirmed anatomically. Two cases were diagnosed anatomically only.

Gargarin's case occurred in a 38-year-old male. He was

kicked in the face by a horse, sustaining a comminuted tracture of both superior maxillae, the palate bones, and the nasal septum. Ophthalmoscopically, in place of the papilla was a dark, almost black spot without blood-vessels, which appeared at a deeper level than the surrounding fundus. There were no light reflexes from this spot. Surrounding it was a rather narrow zone, yellow-white in color, irregular, and sharply defined at the inner margin. Toward the periphery, veins were visible. There were a few fine floating vitreous opacities. The same condition was present in the right eye, but was much more difficult to see, and there were in this eye retinal hemorrhages, and a much more clouded vitreous. This is the first and only case of bilateral injury of this kind on record.

W. T. S.

Myopia.

SCHWARZ, PROF., Leipzig, (Ref. from Wochenschrift für Therapie und Hygiene des Auges, December 15, 1904.) Schwarz recommends during the school years, full correction so long as the near point with the correction is normal for the age. In general, progress and increase of the myopia are in this way retarded. Attention must also be given to the distance at which the near work is held, (35-40 cm.). Re-examination should be made yearly, and any change corrected. The later myopia is corrected, and the higher it is, the less readily will constant full correction be borne.

If the myopia in each eye is quite different in degree, the better eye, which is generally the one least myopic, is first fully corrected, and the second eye is as nearly fully corrected as is consistent with comfortable binocular vision. Frequently, the second eye must be under-corrected.

Myopic presbyopes are given glasses which will give them the same near point which presbyopic emmetropes require. Reduced visual acuity, dynamic muscle disturbance etc., are of course treated according to the individual exigencies of the case.

In high grade myopia, with progressive changes in the posterior part of the eye, Schwarz has obtained good results from the sub-conjunctival injection of 2-4% salt solution. The addition of strychnia nitrate, ½ to 1% seems to favor the action of the injection.

W. T. S.

Occupation Diseases of the Eye.

HANKE, VICTOR, Wien, (Wichenschrift für Therapie und

Hygiene Des Auges, December 15th, 1904.) Hanke classifies occupation disease of the eye under three headings:

1. Direct lesions from solid or gaseous substances. Among these are conjunctivitis and blepharitis due to various trades, bad air, and inclement weather; the conjunctivitis in workers with tulip bulbs, foreign bodies in the cornea, as found among stone breakers, ring-form corneal opacity of bricklayers and steel grinders, the characteristic corneal opacity found among workers of nitronaphlithalin and analin dyes, oyster shucker's keratitis, trophic keratitis in caisson workers, and cataract of glass blowers.

II Indirect lesions as caused through the circulation. Under this heading is found the direct toxic injury to the optic nerve in general poisoning by carbonic acid gas, nitro, dinitro, and amidobenzol; lead-poisoning, etc. Workers in rubber and explosive factories, type setters, japanners, potters, painters, etc., are those affected.

III Neuropathic:—Miners' nystagmus, watch-makers' orbicularis cramp, and cramps of the ocular muscles from exercise.

W. T. S.

The Relation of the Eye to Mental Deficiency.

GELPKE, TH., Karlsruhe. (Ref. from Wochenschrift für Therapie und Hygiene des Auges, December 15, 1904.) Gelpke examined 578 mentally deficient school children, not only as to the eyes and ears, but in every way possible. He divided them into three classes, viz: those mentally deficient, those undoubtedly weak-minded, and idiots.

The importance of such studies is evident if it is true, as Gelpke states, that in the schools of Germany a surprising number of school children are incapable of receiving instruction, and that the number is increasing. The cause of psychic deficiency is not yet clearly understood. It is well known that the underlying cause is a faulty development of the brain cortex, or disease processes which destroy the paths over which impulses are carried.

Injurious influences at the time of procreation, or during gestation are well known to be causes of mental deficiency. Among these are epilepsy, mental disease, consanguinity, drunkenness, intoxication at time of coitus, and great mental depression or mental excitement or instability of the mother during pregnancy.

It has also been observed that violent shaking of the child's head, sleeping upon over-heated surfaces, and the misuse of narcotic drugs can cause in the child's brain pathological processes which when they recover, leave the brain no longer capable of normal development.

Other children are originally apparently normal, and during the first few years of life suffer some disorder of the brain which prevents its further development. The majority of such children have general nutritional disturbance such as rachitis, or anemia, or have some acute infectious disease, as scarlatina, tuberculosis, typhus or diphtheria.

The role played by the special sense organs in these cases, sometimes at birth and sometimes during the first years of life, is not at all known.

According to Krafft-Ebing, mental dullness, without dullness of the sense organs is scarcely thinkable. It would therefore seem, theoretically, that in the examination of those mentally deficient, opportunity would be had for the observation also of deficient special sense organs.

For the development of our intellectual lives, it is not only necessary that the ganglion cells of the brain cortex should be normal, but the special senses, through which impressions are carried to them must also be intact. Lasting impressions can only be made upon the brain cortex by repeated stimulations through the special senses. As both factors must be reckoned with, and as the one is quite as necessary as the other for proper intellectual development, it becomes our first duty in the treatment of these cases to examine and give careful attention to the organs of special sense. This Gelpke claims is not done.

W. T. S.

Free Cysts in the Anterior Chamber.

Meller, J., (Klinische Montsblätter für Augenheilkunde, September, 1904).

Meller describes three cases of cyst in the anterior chamber, in two of which the eyes were examined microscopically. The first case was in a pig's eye. The cyst was small, clear, transparent, and floated free in the anterior chamber. The cyst wall was a fibrin membrane, averaging in thickness half that of the iris. There was considerable pigment both free and in the cells.

The iris tissue was itself normal, but the large amount of fibrin in the aqueous humor indicated the presence of a low grade inflammation, and the anterior surface was covered with a thin layer of fibrin.

In the second case, the eye received a traumatism four

months previously. Owing to discoloration of the cornea trom blood, the cyst was not seen in the living eye, which was shrunken and soft. The iris was atrophic. The cyst wall was composed of fine fibers of connective tissue, containing few connective tissue cells. The inner surface was lined with endothelial cells. Pigment was found in the cyst itself, and upon both surfaces of the capsule. The contents was a coagulated mass.

The third case was observed clinically only. It occurred in a ten-year-old girl, who for the past five years had had attacks of inflammation in that eye. The cyst was small and dark brown or black, and occupied the angle of the anterior chamber. There was a posterior synechia, and also punctiform deposits of pigment upon the lens capsule. The iris tissue was normal. This case resembled those recorded in literature as "free pigment" in the anterior chamber.

From a study of the reported cases up to 1888 Bock concluded that free cysts in the anterior chamber were always remains of the membrana capsulo-pupillaris which has become loosened from the iris and floated in the aqueous.

Bock divided them histologically into two classes, the one having the cyst wall composed of pigment, and the other having the wall composed of pigmented connective tissue.

Meller considers his third case accounted for by Bock's explanation. The cause in the second case is thought to be in direct relation with the traumatism, and the following inflammation.

The first case he believes to be probably due to a slight inflammation of the iris. The iris surface was covered with a thin layer of fibrin; coagulation could have taken place in the anterior chamber, and the leucocytes could have given rise to an endothelial-like covering, thus forming a cyst.

W. T. S.

The Cause of Traumatic Posterior Polar Cataract.

Weiss, E., (Klinische Monatsblätter für Augenheilkunde, September, 1904.) Weiss reports a case of posterior polar cataract following a traumatism. Such cases are rare, and the mechanism of their production is not definitely known. The patient was a man, who one-half hour before presentation had been struck in the eye with a piece of iron. The splinter of iron was sticking in the cornea, which it had pertorated wounding the iris, but not injuring the lens-capsule. The splinter was removed, and three days later examination revealed the following: Corneal wound closed; anterior lens capsule ab-

solutely clear and uninjured; posterior capsule in its outer half-clouded. The area of opacity was made up of a great number of fine pigmented points evenly distributed and resembling sand. The opacity was sharply defined at its inner border by a concave line. To the temporal side it passed under the iris toward the equator. The opacity subsequently cleared, the inner boundary line remaining.

The interesting points are: The development of the opacity without any visible injury to the lens capsule; the peculiar location of the opacity, and its pigmentation.

The cause of the pigmentation Weiss cannot explain. The iron remained in the eye for too short a time to have caused it; free pigment from the iris is unusually rare following an injury of this kind; this and the absence of all inflammatory signs would seem to exclude precipitation from the iris.

A second case from Wintersteiner is referred to. Wintersteiner without explaining the mechanism, says that lens opacity can follow injury to the eye without rupture of the capsule, and that such opacities can disappear.

W. T. S.

Entoptic Phenomena Produced by Deep and Sudden Expiration, and Their Significance.

BIETTI, AMILKARE, Padua, (Klinische Monatsblätter für Augenheilkunde, September, 1904). Subjective light sensation upon sudden expiration, as in coughing, sneezing, etc., has long been recognized. Two theories essentially different have been advanced to explain the phenomenon, the one by Bell, and the other by Hess. Bell's theory is, that in the moment of sudden contraction of the breathing muscles, the eyeball is pushed forward on account of the increased fullness of the vessels of the neck and head. The cause of the light stimulus is the sudden closure of the lids, and the strong contraction of the lid muscles, thus producing counter-pressure.

The procedure is similar to pressing with the finger upon the closed eye in a darkened room. Hess has shown that the phenomenon is independent of the lid closure, and can be readily produced in the open eye. From repeated experimentation and calculation, he localized the points of retinal stimulation, producing the subjective light sensations, and found them to be where the vorticose veins perforate the sclera to leave the eyeball. Bietti, following the methods of Hess, examined entoptically forty-two eyes, measuring the distance of the vorticose veins from the macula, and one from another,

and compared his results with the anatomical measurements made by Fuchs and Weichselbaum.

Fuchs measured from the equator of the eyeball, or from the corneal margin; Weichselbaum from the sheath of the optic nerve. The distances relating to each set of vorticose veins individually, are therefore different from Bietti's results which were calculated from the point of fixation. Comparison can be made, however, of the distances between the different sets of veins

Weichselbaum found the superior vorticose veins about 7 mm. apart, and the inferior about 6 mm. apart. Fuchs, on the other hand found the greatest distance between the inferior vein, i. e., 9 mm. between the inferior, and 8.1 mm. between the superior.

Bietti's results are as follows:

- 1. Distance from the fovea to the centre of the vorticose veins.

- a—Distance between the two upper......12.60 mm.
- d—Distance between the two inner.........15.67 mm.

As pointed out by Fuchs, the vorticose veins do not lie symmetrically to the posterior pole of the eyeball, but are in positions symmetrical to the optic nerve head. Bietti studied entoptically the location of other retinal points and compares them with anatomical data.

W. T. S.

A Case of Double Pseudo-Leukemic Orbital Tumor.

AHLSTRÖM, GUSTAF, (Klinische Monatsblätter für Augenheilkunde, September, 1904). Ahlström's patient was a sixty-year-old, previously healthy peasant. Double progressive exophthalmos was the first sign of disease, and occurred two months before glandular swelling in other parts of the body. The eyelids were thin and tense, and the lid veins were dilated. The cornea was ulcerated from exposure. A portion of one tumor was extirpated and examined microscopically. The excised piece of tumor was gray in color, elastic, and had a somewhat granular surface upon section. It was composed almost exclusively of lymphatic tissue.

The cells were round, with a single large nucleus. There were no giant cells, and no eosinophiles. Here and there through the tumor mass, ran bands of connective tissue. At one place vessels were quite numerous; the vessel walls were thin and densely surrounded by round cells, but not infiltrated with them. No microörganisms were found.

Symmetrical orbital tumors are almost always leukemic or pseudo-leukemic. In this case the subsequent findings and developments placed the diagnosis of pseudo-leukemia beyond doubt. Sarcoma, when developing in both orbits, as it sometimes does, is usually secondary to a primary growth in the nasal or other peri-orbital cavities.

Hochheim collected ten cases of tumor in the orbit or eyelids, in patients with well developed pseudo-leukemia. Other cases of lid or orbital tumor have been reported, which were probably pseudo-leukemic in origin. In most of the cases thus far reported the tumor was in the eyelids only, and in two cases it extended from the lids into the orbit. In not a single case, however, was the orbit alone the seat of tumor, the lids remaining free, as in the case reported by Ahlström.

As to the pathogenesis of this condition, Ahlström is inclined to think that a change takes place in the lymph channels, which are fairly well distributed throughout the orbit and lids; under the influence of the general pseudo-leukemic process, infiltration of the vessels and lymph channels takes place, and cell proliferation is favored by the loose non-resisting connective tissue found in these parts.

If the general glandular involvement in pseudo-leukemia is to be considered as due to an acute infectious process, the orbital tumors must be considered of different origin, as there are no lymph glands within the orbit.

W. T. S.

The Tolerance of the Eye to Foreign Bodies Within it.

Wirtz, R., (Inaugural Dissertation, Strassburg, 1904, Ref. from Wochenschrift für Therapie und Hygiene des Auges, February 15, 1905). Wirtz describes three cases of toreign body within the eyeball in which there were no symptoms and full normal vision was retained. In two of the cases the foreign body was iron, and in one case a small grain of shot.

Thirty-four cases are tabulated from the literature in which iron or steel particles remained within the eyeball with little or no disturbance of vision; also thirteen similar cases with copper as the foreign body, four cases in which lead entered

the eye, and finally one case in which the foreign body was wood and glass.

The tolerance of the eye to foreign bodies is dependent upon the size of the body, its aseptic condition, and its chemical action. Lead is the least, and copper the most dangerous substance to enter the eye. Next to the size of the body, encapsulation and position are of great importance.

An encapsulated body is not always powerless to cause further trouble. The cause of encapsulation is not definitely known. Copper seldom becomes encapsulated. For encapsulation, the position of the body is of importance. Iron situated in the tunics of the eyeball becomes more rapidly encapsulated than when situated in the vitreous.

Copper in the neighborhood of vascular structures exerts a greater and more dangerous chemical action than when in the vitreous, where the higher percentage of albumin miminizes this action.

The action of lead is not vet well understood. W. T. S.

An Experimental Study of the Anti-toxic Effect of the Tears Upon the Toxin of Diphtheria.

DEMARIA, ENRIQUE B., (Klinische Monatsblätter für Augenheilkunde, September, 1904). There are a number of specific and pathogenic microorganisms, which find in the conjunctival sac an especially favorable medium upon which to grow and thrive. Such are for instance, the Koch-Weeks bacillus, the diplo-bacillus of Morax-Axenfeld, and the hypothetical organism of trachoma. Upon these, the tears have apparently no important bactericidal or anti-toxic effect. Upon the other hand, the diphtheria bacillus is not often found in the eve, and when it is, generally produces a relatively mild form of the disease. As opposed to infection, the tears could act in two ways: (a) they could act directly upon the organisms, weakening them, or killing them,—bactericidal action, or (b) they could act upon the toxins,—anti-toxic action. Naturally, they could also possess both properties. Much has been contributed concerning the bactericidal action of the tears, but comparatively little is in evidence concerning their anti-toxic action.

Demaria's studies are confined to diphtheria, because the diphtheria toxin is well known, and easily controllable. Gosetti and Jona found that the tears had no bactericidal effect upon the diphtheria bacillus, but believed that they had an anti-toxic effect. Virulent cultures, in the presence of tears, lost their virulence. The life of guinea pigs that had been given lethal

doses of diphtheria toxin could be prolonged by the addition of lacrimal secretion to the injection.

DeBono and Frisco found the lacrimal secretion of no bactericidal value in diphtheria, and of anti-toxic value only when mixed with the toxin for some hours previous to injection. Coppez found the tears to possess no anti-toxic influence in diphtheria.

Rymowitsch experimented with the typhoid bacillus, and the vibrio of cholera, to determine the possible anti-toxic properties of the lacrimal secretion, and the aqueous humor. His conclusions were in the negative.

Demaria in his experiments used pure diphtheria toxin.

- 1. He experimented with artificial lacrimal secretion made after Bach's formula.
- 2. He conducted a series of experiments with human tears, taken in part from those recently operated upon for removal of the lacrimal sac, and in part from persons with keratitis, etc.
- 3. He sought to determine if diphtheria anti-toxin serum, injected into the body, found its way into the tears after twenty-four hours.
- 4. If human tears twenty-four hours after an injection of diphtheria antitoxin serum had an agglutination action upon the Klebs-Loeffler bacillus.

Demaria's conclusions are:

- 1. The artificial lacrimal secretion did not prolong the life of guinea pigs, inoculated with small doses of diphtheria toxin. These investigations were made to determine the value of such a chemical mixture in diphtheria, because Bach and Helleberg had found artificial lacrimal secretion bactericidal to the staphylococcus.
- 2. The lacrimal secretion from eight different persons did not prolong the life of guinea pigs inoculated with small doses of diphtheria toxin.
- 3. The lacrimal secretion of persons immunized by Behring's anti-toxin serum, showed no antitoxic action against diphtheria toxin.
- 4. In the experiments made with the immunized lacrimal secretion, Demaria found no agglutinative action upon the diphtheria bacillus, but further than this he will not go.

W. T. S.

The Open Wound Treatment after Cataract Operation.

WICHERKIEWICZ, B., (Klinische Monatsblätter für Augenheilkunde, September, 1904.) The chief advocate of the open

wound treatment after cataract operation is Hjort who published his method first in 1898. By "open method" Hjort means that no dressing of any kind is to be used. The eyeball is thus free from pressure, and there is no disturbance of the natural secretion and flow of the tears. Wicherkiewicz, modifies this method somewhat, but claims to accomplish the same ends.

Wiecherkiewicz's method is as follows: The evening before operation, the eye is antiseptically washed; the brow is shaved, and the field surrounding the eye washed with soap and water, alcohol and sublimate. The conjunctival sac is again washed with weak sublimate and physiological salt solution. A bandage is then applied. If upon the following day there is any doubtful or undue secretion, the operation is postponed.

If conditions are favorable for operation, the conjunctival sac and tear canals are washed with warm salt solution: the lid margins are cleansed with sterilized cotton, and a 1 per cent. cocain solution is instilled several times. The operation is then performed. If uncomplicated, the eye is gently closed and a piece of properly cut rather stiff brown silk paper is placed over the eve and fastened at the brow, temple, cheek and nose with gum arabic. A second or third piece is applied if further protection is needed. The eve-ball is left perfectly free from pressure, and its movements are in no way hampered. The advantages of this method over Hiort's method are that the patient is not tempted to try the eye, and he cannot touch it. If there is considerable irritability, the tears wet the paper and give warning. As compared with the tull head bandage, it is better because the head can be moved without disturbing the eve, by drawing and displacing the bandage, which is not always the case with the former.

In some cases a thin piece of gauze is placed directly over the closed eye, before the silk paper is applied.

Wicherkiewicz has had most favorable results following this mode of dressing. The eyeball is subjected to little or no pressure, the involuntary movements of the eyeball are not hindered, and there is no obstruction to the flow of tears and mucus; furthermore, the patient is constantly reminded of his responsibility and will conduct himself accordingly. The most careful surgical cleanliness is observed throughout. In Wicherkiewicz's series of cases, treated in this way and carefully tabulated, post-operative hemorrhage has occurred less frequently, healing of the wound has been more rapid, and

patients have remained more quiet after operation, and have been discharged from the hospital sooner.

Although less radical than Hjort, whose "open method" is absolutely open, Wickerkiewicz considers that he has advanced far in the right direction, and regrets that his previous operations on the eyeball were not treated according to his modified open method.

Xerosis Conjunctivae Infantum. (Hikan).

Mori, M., Centralblatt Med. Wissenschaft, 1904, 51 Ref. from Wochenschrift für Therapic und Hygiene des Auges, January 12th, 1905.) Hikan is a peculiar children's disease occurring epidemically in Japan during the summer months. It is identical with Brazilian Ophthalmia, and with that occurring in Russia during the fasting season. Children from 2 to 5 years old are most frequently attacked.

The symptoms are diarrhea, morbid hunger, distension of the abdomen, emaciation, dryness of the skin, night blindness, xerosis conjunctivae, and in severe cases, opacity of the cornea, keratomalacia, hypopyon, perforation, iris-prolapse and complete blindness. All of these symptoms do not occur in every case. The disease has been found in Europe, but very seldom. Mori believes the disease to be due to insufficient fat assimilation, and that the diarrhea plays the role of diminishing fat absorption. Upon this hypothesis, cod-liver oil is administered, notwithstanding the diarrhea, and with favorable results.

W. T. S.

Intermittent Convergent Strabismus.

HAEHNLE, (Die Ophthalmologische Klinik, February 20th, 1905.) Hähnle reports two cases of this condition which he says is exceedingly rare, but few cases having been observed. Girls are more often affected than boys, and the ages range from six to twelve years.

Hähnle's first case was a ten-year-old girl. The one eye was turned far into the corner every other day. She was hypermetropic, vision of each eye was normal, and notwithstanding well developed binocular vision, she at no time had diplopia. The intermittent strabismus was not influenced by the use of atropin or by the wearing of glasses.

The second case was a boy seven years old. For a time the squint was periodic; it then became constant for a time after which it became intermittent, appearing and disappear-

ing upon alternate days. Refraction was hypermetropic of low degree. W. T. S.

The Eye Symptoms of Traumatic Neurosis.

CHALUPECKY, (Ref. from Wochenschrift für Therapie und Hygiene des Auges, January 12th, 1905.) Chalupecky examined 15 cases of traumatic neurosis with eye symptoms, from the literature, and gives the following conclusions.

- 1. The most constant symptom was concentric contraction of the fields, one case showing the Parinaud type with the field for white more contracted than that for colors.
- 2. Anesthesia of the cornea and conjunctiva was less often found than is usually considered.
 - 3. The functional disturbances of the muscles were spasmodic in character. The missis found in one case was thought to be due to spasmodic contraction of the sphincter iridis.
 - 4. Disturbance of the color sense was in two cases manifested as partial color blindness. In this connection amblyopia was usually also present. The cause was located in the peripheral visual apparatus, i. e., in the optic nerve, or in the retina.
 - 5. Of great practical importance are those cases of traumatic neurosis in which, after an accident, one eye is entirely blind or lost, while the other is amblyopic. It is necessary in such cases to exclude the existence of sympathetic inflammation
 - 6. The course of all cases of traumatic neurosis is chronic, with variations for better or worse from time to time. The eye symptoms improve with a betterment of the general condition.
 - 7. The prognosis is always grave. In the treatment, psychic and moral rest are of greatest importance. W. T. S.

Pigmented Cysts of the Posterior Surface of the Iris.

Schieck, F., (Klinische Monatsblätter für Augenheilkunde, October, 1904.) Schieck reports two cases of pigmented cyst formation upon the posterior iris surface, and calls attention to the great difficulty in diagnosing this condition from melanotic sarcoma.

Eyes so affected are generally enucleated, under the diagnosis of sarcoma, but subsequent examination shows that enucleation was at least not demanded. The mistake is all the more likely to occur, because pigmented cysts in this locality

are extremely rare, while melanotic sarcoma of the anterior uveal tract is relatively frequent.

The first case was a girl 22 years old. After three weeks of careful observation, the diagnosis of melanotic sarcoma of the iris and ciliary body was made; the eye was then enucleated. The second case was a man aged 66 years, upon whom a cataract extraction had been performed. The operation was complicated and the result was not good. The eyeball was enucleated four months later, after repeated attacks of irido-cyclitis.

The cyst in this case was caused by exudation separating the retinal from the uveal pigment layer of the iris, the interspace forming the cyst.

W. T. S.

Sarcoma of the Chorioid.

FLEISCHER, BRUNO, (Klinische Monatsblätter für Augenheilkunde, October, 1904.) Fleischer describes clinically and pathologically a pigmented spindle-cell sarcoma, poor in bloodvessels, occurring in the chorioid of a 65-year old man. The tumor took origin from a point near the temporal edge of the papilla. It broke through into the vitreous in the nerve opening and pushed ahead of it the nerve fibres of the papilla.

Fleischer has not found such an entrance of a chorioidal sarcoma into the vitreous described in the literature, although it would be expected that tumors situated near the papilla would find less resistance at the chorioidal termination next the optic nerve canal, than in the lamina vitrea chorioidae further removed. He believes that parapapillary tumors more frequently enter the vitreous as this one did, than is supposed, but are not observed to do so because, once in the vitreous, they grow so rapidly that they soon cover the entire disk.

At the same time that the tumor broke through, it rapidly encircled the disk. Fleischer believes that it encircled the nerve in the canal before breaking through, and was therefore really a peri-papillary sarcoma as described by de Lapersonne and Opin, Fehr and Moehlmann. The retina was divided by the tumor into two layers as recently described by Bruns. Bruns explains this by an agglutination of the deeper layers of the retina with the lamina vitrea of the chorioid; and after the latter is ruptured, the retinal layers next to the vitreous are pushed forward and are thus separated.

Fleisher does not believe that the fluid in the inter-retinal space thus formed is vitreous, as he could not demonstrate any connection with the vitreous chamber, but thinks it is more probably transudation.

Bruns has observed a dissemination of tumor foci throughout the pigment epithelium which he explains upon Knapp's hypothesis of wandering of tumor cells from the subretinal exudate into the pigment epithelium.

W. T. S.

The Treatment of Ulcus Serpens Corneae with Pneumococcus Serum. (Roemer).

Zeller, Otto. (Württemb, Med. Korrespond Blatt, 1904. Ref. from Wochenschrift für Therabie und Hygiene des Auges. January 12th, 1905.) Römer considers ulcus corneae serpens due to a specific infection of the cornea from the pneumococcus. In 95 per cent, of the cases the diplococcus lanceolatus, of Fraenkel-Weichselbaum was found. Römer demonstrated that there can be a pneumococcus immunity, due to the production of a substance which dissolves the bacteria themselves. This substance is not an antitoxin, and the immunity is one to bacteria, and not to the toxin produced by them. A bacteriolytic serum has been produced by Merck which Römer has experimented with upon animals and upon man with encouraging results, in cases of pneumococcus ulcer. If used in the beginning the cases proceeded almost without exception to rapid healing: in the more advanced cases a cure was obtained in eighty per cent. Such good results have not been gotten by other investigators.

The dose as used by Römer is 10 cc.; Zeller advises at the beginning the use of not more than 5 cc., of the serum, subcutaneously per diem. The conclusions are, that beginning serpiginous ulcers, which have not spread much, can be cured by injection of the serum. Such as are favorable to the injection are those in young subjects which will also as a rule get well under the other more usual methods of treatment. In more progressed cases, with the serum injections, cauterization must also be used; the serum seems in these cases to act favorably, so that a relatively large area of the cornea can be kept transparent. In a few cases the treatment has no effect.

W. T. S.

Choked Disk.

KAMPHERSTEIN, (Korrespondenz Blätter, 1904. XII. Ref. from Wochenschrift für Therapie und Hygiene des Auges, January 19th, 1905.) Kampherstein examined microscopically 55 eyes with choked disk. Fifty-one were from cases of brain disease, three, from cases of orbital tumor, and in one the choked disk followed necrosis of the cornea in the course of

conjunctival diphtheria. Of the 51 cases of brain disease, 32, or 65 per cent, showed a widening of the spaces between the membranes surrounding the optic nerve. In 19 of these 32 cases, or 40 per cent. the widening was very marked. in the remaining cases it was only a little beyond the physiological. Early in the disease there is usually little or no widening of these spaces, while later, especially when atrophy is commencing, it is always marked.

The distension is generally in the subarachnoidal space. The arachnoid is pressed against the dura, and in the later stages it is thickened and adherent. In three cases the subdural space was distended with fluid.

Nineteen cases (35 per cent.), showed no distension of the inter-membranous space. In some of these cases no changes were noted in the sheath of the nerve, and in others there was inflammatory infiltration. In 75 per cent. of the brain cases, inflammatory products were found in the intervaginal spaces.

In five of the brain cases, nothing pathological could be demonstrated in the nerve trunk, although in one there was perineuritis, and in 4 fluid distension of the sheath. There can be no doubt, however, that there were pathological changes in these cases, even though not demonstrable in the sections.

Inflammatory changes were found in 56 per cent. of the cases. They were of very varying intensity, in many cases being so slight that they cannot be considered as influencing the choked disk. The inflammatory changes do not correspond in intensity with the amount of distension of the intervaginal spaces.

In cases showing mild inflammatory changes, there were isolated places of round cell collections, in the septa and their finer processes. In the cases in which there were extensive inflammatory changes in the intervaginal spaces, involving also the pial sheath, the process extended into the optic nerve trunk, and there was round cell infiltration in the pial sheath.

Kampherstein considers edema of the optic nerve trunk the chief symptom of choked disk. He found it more or less marked in 60 per cent. of the cases. Following Ulrich, he divides it into sub-pial, interfascicular and intrafascicular edema. The sub-pial edema, he observed but in a few cases. The most frequent and characteristic edema was the interfascicular. Much less frequently was the intrafascicular observed, and then naturally in connection with the interfascicular edema.

The lamina cribrosa was pushed forward in 88 per cent. of the cases of early choked disk. Kampherstein differentiates

in choked disk the chorioidal from the scleral lamina. The former is that portion which in choked disk is always principally curved forward.

Fifteen of the 42 brain cases showed no inflammatory changes in the papillae. Twenty-seven cases showed inflammatory papillae.

Kampherstein concludes that choked disk is to be explained in no other way than as a direct transferrence of edema of the brain. The edema travels from the brain through the optic nerve, and through the lamina cribrosa into the papilla. Here, incarceration phenomena develop, due to the non-yielding scleral opening, and the rigid lamina cribrosa.

Two hundred cases of choked disk from the material of Uhthoff were examined clinically and neurologically, and diagnosed as follows:

	Cases.
Brain tumor	134
Cerebral syphilis	27
Tuberculosis	9
Brain abscess	
Hydrocephalus	
Meningitis	
Nephritis	
Nephritis with lead poisoning	
Anemia	
Cysticercus	2
Sinus thrombosis	
Bone callus	1
Cranial malformation	3
Uncertain diagnosis	4

Clinically the first symptom of choked disk is diminution of vision; secondly come the changes in the visual fields.

These changes statistically arranged are as follows:

	•	Times.
1.	Enlargement of the blind-spot	72
2.	Fields unchanged	16
3.	Concentric contraction	30
4.	Partial peripheral contraction	16
5 .	Hemianopsia ·	6
	Central scotoma	
7.	Total color-blindness	1
8.	Enlargement of the blind-spot of one eye, concentric contraction of field for the o	
	A11A	2

9.	Concentric contraction of field for one eye,
	and blindness of other eye 2
10.	Blindness
11.	Light perception only 7
	Blindness with return of good vision later 2

Uhthoff, among 81 cases of diagnosed brain tumor which he himself observed, found choked disk 57 times or in 61 per cent. Much less frequently is it found in cases of intra-cranial inflammation. Among 100 cases of brain syphilis which he observed, Uhthoff found choked disk 14 times. Among 19 cases of tubercular meningitis, neuritis was found 4 times, but choked disk not at all. One hundred and fifty-five cases of brain abscess showed choked disk 42 times.

It would seem, therefore, that intra-cranial inflammatory processes do not in themselves cause choked disk, but that there must always be an increase in the intra-cranial pressure.

W. T. S.

A Warning Against the Use of Adrenalin in Glaucoma.

SENN, A., (Wochenschrift für Therapie und Hygiene des Auges, January 26th, 1905.) Senn reports two cases of glaucoma in which the use of adrenalin 1-1000, was immediately followed by disastrous results. In one case the adrenalin was used alone, and in the other in combination with eserin. In both cases the pupil rapidly dilated, and the tension became markedly increased.

Senn suggests that in these cases, the contraction of the anterior ciliary veins, which was the immediate effect of the adrenalin, lessened the outflow of the intra-ocular secretions; and stimulation of the dilator fibres of the iris produced the wide mydriasis with its necessary consequences. The later effects of adrenalin are to contract the ciliary body and thus limit secretion.

Senn sounds a warning against the use of adrenalin in acute inflammatory, sub-acute and chronic glaucoma until after eserin has been used with positive results.

W. T. S.

A Rare Operation.

HIRSCHBERG, (Centralbl. f. prak. Augenheilk.) reports an unusual case of a piece of steel lodged in the optic nerve, and its removal with the magnet.

The patient is in sitting position. Eye anesthetised with holocain. The strongest tip of the hand magnet was placed

against the eve on the temporal side of the horizontal meridian at the equator, and the splinter thus loosened. Then one-half the strength of the giant magnet was applied at the same point. for a short time, and immediately an ophthalmoscopic examination was made. The splinter could no longer be seen i. e., it had been removed to point in front giant equator. Then one-half of the strength the border magnet was allowed to act on the lateral the cornea, whereupon the first pain was felt, and at the same time the splinter was seen behind the iris. strength of the magnet to the lower part of the iris. incision into the cornea was made, and the small tip of the hand magnet was introduced and the splinter was drawn out. Final result: V=5/7.

Lymphoma Conjunctivitis.

Goldzieher, W., (Centralbl. f. prak. Augenheilk., Jan.,1905) draws attention to the fact that 11 years ago, without knowledge of Parinaud's investigations, he had reported 3 cases of "Lymphoma of the Conjunctiva" to the Royal Society of Physicians. In brief, his report was as follows: "The disease is characterized by an intense conjunctivitis with enormous follicular enlargements followed at once or very shortly by enlargement of cervical lymph nodes. Usually only one eye is affected, but the conjunctiva of both lids. There is an intense swelling and hyperemia, the fold of transmission shows huge tumefactions on eversion, and are so rich in blood that the slightest touch may cause bleeding. The follicles are enormously enlarged, sometimes arranged in rows. The picture resembles acute trachoma except for the presence of the giant follicles."

"Secondly, there are enlarged preauricular or inframaxillary nodes, sometimes reaching a considerable size, and fairly hard."

"Clinically it is diagnosed from tuberculosis by its curability, by absence of characteristic ulceration, and by absence of tubercle bacilli."

"The treatment is excision, with the scissors, of the large nodules, cauterization of the bleeding area and smaller nodules with the electrocautery; and daily lavage with 1-1000 sublimate solution, with arsenic internally."

In another case, the author observed first swelling of nodes of neck and lower jaw, which was followed by ocular symptoms. Nodes subsequently suppurated. He also mentioned a case

where the inflammatory symptoms were very minimal. This case was cured by iodoform salve, and internal administration of iron and arsenic.

The literature is very scant. The etiology is obscure. The course is benign, as the process usually heals without cicatrices or involvement of the cornea. The granulations should be excised and local treatment with iodoform and astringents—no irritative substances like copper sulphate—should be aided by internal administration of arsenic and iron.

The author describes the microscopical appearances of his specimen as follows:

IVMPHOMA-GOLZIEHER.

- "(1) The follicle is covered by stratified cylindrical epithelium, which is normal nearly everywhere, although in some places it contains foci where the epithelial cells have undergone a mucous change. Thereby, vesicular spaces are formed under the surface, which are covered only by a thin layer of squamous cells and which contain some faintly staining cells which hang together and are connected with the other epithelium by processes. It can easily be seen how the bursting of such a vesicle would cause a loss of substance, which explains why many observers have described ulcer formations. Under the epithelium is found a layer of tissue entirely comparable to adenoid tissue whose spaces, sometimes entirely empty, sometimes densely infiltrated with leucocytes, are separated from the surrounding tissue by connective tissue. In the tissue are many wide vessels and lymph spaces.
- "(2) In the specimens of the second group, there is found in many places, a completely normal epithelium, under which is a loose tissue composed of a fibrous, reticular ground-substance infiltrated with cells much larger than lymphocytes and containing large nuclei. Lymphocytes, on the contrary are rare. This tissue is probably highly edematous adenoid tissue. But there are places where the epithelium is changed, the cells are vesicular, mucous degenerated and press, in groups or columns into the tissue, where they can be easily distinguished by their form, size and pale color. In addition, there are giant cells in large numbers, numerous sections of blood vessels and wide spaces, lined with epithelium, where few leucocytes are found."

Bilateral Vitreal Hemorrhages.

FEJER, J., (Centralbl. f. prakt. Augenheilk., Jan., 1905) de-

scribes such a case. The antecedent cause was probably syphilis, though the therapeutic results of antiluetic treatment were negative. Little was achieved by mercury, iodides, 2% salt solution injected subconjunctivally or pilocarpin injected hypodermically.

C. L,

The Astigmoscope.

ROTH, A., (Central. f. prakt. Augenheilk., Jan., 1905) describes an instrument, under the above name, which is a modification of the Placido disc. The disc is capable of being bent, and the amount of bending necessary to convert the ellipse on the cornea into a circle is read off on a scale, and gives the degree of the astigmatism. As the disc can be rotated, it will give the astigmatism no matter what the axis is.

C. L.

A Rare Corneal Tumor.

HIRSCHBERG, I., and GINSBERG, S., (Centralbl. f. brakt, Augenheilk., Feb., 1905) describes a case that clinically caused the diagnosis of a perforated iris tubercle, which involved nearly the entire cornea. Microscopically, however, the findings, summarised, are as follows: The affection was limited to the cornea, and led to a formation of granulation tissue. There was a slight inflammation of the iris and ciliary body. process might be called an extensive pannus. An inflammatory infiltration of the parenchyma seems the point of origin of the tumor. The granulation tissue was affected by pressure of the lids and mechanical insults such as rubbing in such a way that there were inflammatory reactions and disturbances of circulation, as shown by the abnormal positions of the white cells. These same insults have likewise caused hemorrhages and edema of the tissue in places. C. L.

An iron Spiinter in the Lens; Biindness Caused by Increase of Pressure.

HIRSCHBERG, J., (Centralbl. f. prakt. Augenheilk., Feb. 1905) reports a case where a mechanic had suffered for 2 years from the effects of an injury to the lens caused by the penetration into it of a piece of iron. The eye was removed on account of the pain. An exceptionally deep excavation was found in the nerve.

C. L.

The Eye Symptoms of Myasthenia.

BIELSCHOWSKY (Muenchener medizinische Wochenschrift, December 20th, 1904). Bielschowsky's case was a 17-year-old

girl with good family and personal history. The first symptom noticed was a gradually developing ptosis on the right side, followed in a short time by ptosis on the left side. The ptosis improved and disappeared from time to time. Vertical diplopia was noticed early, but later disappeared. Slight paralysis of the frontalis and orbicularis muscles prevented a lifting of the lid and brow, and also a firm closure of the lid. The ptosis could not be voluntarily overcome, but at times there was an involuntary widening of the palpebral fissure. The visual axes for distance were parallel; convergence was maintained up to 40 to 50 cm., beyond which the eyes returned to parallelism, the patient then having crossed diplopia.

Lateral movements to the right or left were almost abolished, as were also those of supra and infra-duction. Prism adduction was 10°; prism abduction 2°.

The pupils were equal; the irides reacted normally to light and convergence.

Refraction was enumetropic; accommodation was normal; there were no changes in the fundus. The patient showed some of the symptoms of hysteria (globus and clavus).

Some time after the ptosis and diplopia were noticed, the other general symptoms of myasthenia began to appear. These were: loss of appetite, loss of flesh, change in speech, difficulty in swallowing with frequent regurgitation through the nose, difficulty in chewing, weakness of the arms and legs, rapid exhaustion upon exertion of any kind, etc.

Under treatment the eye symptoms became less marked, and in part disappeared so long as the patient was at rest, but would reappear and vary in intensity upon the slightest exertion.

Paresis of the external ocular muscles is the first symptom in about one-third of the cases of myasthenia thus far reported. The ophthalmologist is, therefore, frequently the first to be consulted in this disease. Notwithstanding this, however, there is comparatively little in the literature concerning myasthenia from the ophthalmological standpoint.

Ptosis, which is the most constant symptom, occurred in 80 out of 100 cases. It is usually bilateral, of unequal degree, and shows during the day great variation in intensity. A patient under examination may at first exhibit no ptosis, and after a few movements of the eyes, or wrinkling of the forehead, etc., the lids will be observed to gradually fall. This may occur even after talking, or after the patient's attention has been aroused.

Goldflam says that every isolated ptosis without previous symptoms, especially if it disappears after a longer or shorter

time and recurs, is suggestive of myasthenia. Of greater significance is the combination of ptosis with paresis of the fore-head and lid facialis.

Cases have been reported in which years after intermittent ptosis without other symptoms, severe myasthenia with all its characteristics has suddenly developed.

It must be remembered, however, that ptosis is an uncommonly frequent symptom of many nervous diseases. Charcot has observed periodic ptosis in a case of polio-encephalomyelitis. Still more uncertain and irregular in its behavior is the paralysis of the external ocular muscles. It seems established that the internal ocular muscles remain unaffected. This, however, is no criterion for myasthenia, as in congenital and acquired stationary ophthalmoplegia externa the external muscles alone are affected. Such is often noticed also in acute and chronic polio-encephalitis.

The only eye symptom, which is pathognomonic, is the rapidly appearing and fleeting paresis of the external ocular muscles, produced upon exertion. In other words the muscles become quickly exhausted. Aside from this condition, a differential diagnosis must be made, and often we must wait a long time for the appearance of other symptoms of myasthenia before a positive diagnosis can be made.

W. T. S.

The Differential Diagnosis of Progressive Paralysis.

SIEMERLING (Abstract from Proceedings of the Medical Society of Kiel. Ref. from Muenchener medizinische Wochenschrift. January 3rd, 1905). Siemerling considers first the symptomatology. The most constant symptom is mental deterioration. Other symptoms are: disturbances of voice, of the motor and sensory tracts, and changes in writing and speech.

Pathological pupillary phenomena occur in 62 per cent. of cases. Patellar reflexes are increased, with spastic paralysis, or abolished with tabetic symptoms.

Tabetic symptoms frequently precede the cerebral symptoms; sometimes by 10 or more years.

Pupillary disturbances are often the earliest symptoms. Simple inequality is not very significant; loss of light reflex is of great importance; and, when associated with inequality, is ominous.

Loss of light reflex in middle life, together with pronounced

neurasthenia, demands careful consideration. Of like importance is the continued loss of the patellar tendon reflex.

Epilepsy, trauma, alcoholism, brain tumor, and arterio-sclerosis can give a clinical picture resembling the above. Genuine epilepsy commencing in middle life is extremely rare. In progressive paralysis the most frequent paralyses are of the face, tongue, and eye muscles.

In the differential diagnosis, lumbar puncture, can be of great service. Increase of leucocytes, and a clouding of the fluid upon addition of MgSo4,, warrant the conclusion, almost always that there is present a chronic irritation of the meninges.

The pupillary changes, change in the reflexes, etc., must not be confounded with those of maniacal and melancholic conditions.

In alcoholism, the loss of pupillary light reflex which is not frequent, may be mistaken for a symptom of paresis. Paresis in old age is seldom found. Early arterio-sclerosis is sometimes deceptive, and can cause a mistake in diagnosis. Brain tumor shows choked disk, which distinguishes it from paresis. If choked disk is absent, the differential diagnosis may be difficult.

Pyschoses with traumatism are not attended by such marked deterioration of intelligence as is paresis.

From multiple sclerosis, the periodic and temporary improvements of paresis are of diagnostic importance.

W. T. S.

The Latest Advances in Ocular Therapy.

Darier, A., Paris (Die Ophthalmologische Klinik, December 5th, 1905). At the last International Ophthalmological Congress in Lucerne, the consensus of opinion was, that local therapy in the form of sub-conjunctival injection, was, for many forms of eye disease, a most curative measure. By the use of acoin, sub-conjunctival injections can be made without much pain. Darier devotes his paper not so much to the finding of new remedies to be used sub-conjunctivally, as to a study of the precise indications for the cases in which these injections should be used. He calls special attention to the fact that these injections are not to be considered a general panacea, but as a little surgical measure reserved for those cases only in which the simpler remedies fail, or when, for fear of complications, an intense and prompt action is desired.

Sub-conjunctival injections produce their effects in three ways:

- 1. Local irritation, with exit of the equeous humor through Schlemm's canal and the spaces of Fontana, due to the presence of the two fluids of different specific gravity (osmosis).
- 2. Hyperemia of the ciliary body is produced, and an aqueous humor richer in albumin and protective substances is secreted (Wessley).
- 3. Finally, a condition of equilibrium is produced, which favors resorption (Darier).

Ophthalmologists have used sodium salicylate sub-conjunctivally in rheumatic affection of the eye, since 1891 (Moll).

Personally, Darier has done so but little, because of the difficulty in positively knowing that rheumatism is the cause, and because rheumatic affections of the eye yield as a rule to other more simple methods. Aspirin is preferable to salicylate, because its analegesic effects are not so apt to be accompanied by other disagreeable results (tinnitus, hallucinations, etc). Another method of administration which commends itself is the intra-venous injection. It is less painful than the subcutaneous injection, much quicker and more certain in action, and since August, 1904, he has daily used intra-venous injections of sodium salicylate with the best results. The formula is:

Sodii Salicylat	2
Caffeine.	
An dest	10

One to three ccm. are injected daily directly into one of the veins of the elbow. Cases of iritis, severe irido-cyclitis, keratitis and scleritis have responded promptly even after but one injection, and cases, too, in which salicylate and aspirin had been tried internally without permanent result.

Bodal has recommended the use of potassium iodid solution dropped in the eye in cases of incipient cataract. Darier has little faith in the procedure, although he has seen vision improved by the long continued use of potass. iodid and sodium iodid aa. .15 aquæ destilat 10., dropped frequently into the eye.

He has also noticed that the extracted cataractous lens, after a prolonged use of these drops, seems smaller than it does in patients not so treated.

As yet there is no known medical remedy which dropped in the eye or taken internally, will absorb lens-opacities, although they sometimes disappear spontaneously.

In 1893 Darier experimented with 75 per cent. salt solution sub-conjunctivally, but the results were very doubtful and unsatisfactory. Bordereau of Madrid, however, has seen lens opacities clear up after a few sub-conjunctival injections of potassum iodid. In cases of iritis and glaucoma, Schiele has observed a great lessening of pain and a reduction of tension after the sub-conjunctival injection of a 1 per cent. solution of sodium salicylate.

As an indication for the use of sub-conjunctival injections, Darier mentions traumatic infection of the cornea, with erosion of epithelium and extensive infiltration. In such cases dionin is first used, dropped in the eye in combination with cocain and solution of cyanate of mercury, 1-1000. If the infection is brought to a standstill by the next day, these drops are continued; if, on the other hand, the process progresses, sub-conjunctival injection is then indicated. For injection, Darier uses either salt solution, solution of sodium salicylate, or alcohol 15. with water 85. parts. The underlying action of these three injections is the same as that of dionin, but more energetic.

Alcohol as an injection is well spoken of. It does not cause much pain, is quickly absorbed and causes but little reaction. Furthermore, it can be used to dissolve substances for injection, not soluble in water.

Darier has experimented with serum injections and finds them very efficacious.

W. T. S.

Metallic Foreign Bodies in the Eye.

KAUFFMANN, E. (Ophthalmologische Klinik, January 5th, 1905). Kauffmann reports ten cases. In two cases the piece of metal was in the anterior portion of the eyeball, and could be seen with the unaided eye. In two cases the foreign body entered through the sclera, and was extracted through the wound of entrance. In the remaining six cases the foreign body reached the vitreous through the front of the eye, and a special opening had to be made for extraction.

The final results in the eight cases in which the foreign body was in the vitreous were: Two eyes were lost from panophthalmitis; three eyes were saved with useful vision, and three eyes were saved with good vision.

No eyes were lost that came to operation immediately, or shortly after injury, and were at the time free from inflammation. Panophthalmitis destroyed two eyes in which the foreign body was allowed to remain for several days.

Kauffmann concludes that, in recent injuries of this kind, the foreign body must be removed immediately after the diagnosis is made, and that delay in this respect is likely to prove fatal. By recent cases he means those seen within the first or second day after injury, while it is yet uncertain whether or not the foreign body is septic. Aside from the danger of sepsis, delay renders extraction more difficult, because the foreign body soon becomes enveloped in exudate, etc.

When the body has entered through the anterior portion of the eyeball, the giant magnet should first be tried, in an effort to bring the body around the lens into the anterior chamber.

A large foreign body deep in the vitreous calls for a meridional incision, and the hand magnet. To attempt extraction with the giant magnet upon several successive days, Kauffmann considers dangerous, as sepsis, if it develops, will destroy the eye, but a meridional incision acts favorably. Furthermore, the giant magnet in these cases can cause great damage. If a foreign body remains in the eye for two or more days without infectious symptoms, it may be considered to have been aseptic. The sideroscope gives very valuable information concerning these cases and should be used when metallic foreign bodies are suspected.

The future of an eye which has had a piece of steel or iron in the vitreous, is at the best uncertain. Detachment of the retina may occur years afterward, or destructive processes may arise which demand enucleation.

W. T. S.

The Pathological Anatomy of So-Called Drusen Bodies of the Lamina Vitrea of the Chorloid.

RUMSCHEWITSCH, K. (Klinische Monatsblätter für Augenheikunde, October 1904). Rumschewitsch reports four cases in which there were drusen bodies, and gives the complete clinical history and microscopic examination for each case.

Case one was sixteen years old; case two was twenty-five years old; case three was twenty-two years old; and case four was thirty-eight years old. The literature of the subject with the several advanced theories is thoroughly reviewed.

Regarding the relationship of the drusen to the vitreous membrane, H. Müller considered the former only a thickening of the latter. Other observers consider the process a purely pathological one. Adolph Meyer found that in well marked drusen formation the bodies did not correspond to the thickest portions of the lamina vitrea, and in a case of Pagenstecher's the lamina vitrea had entirely disappeared.

Alt, Greef and Ginsberg found a distinct line of separation between the drusen and the vitreous membrane, Da Gama Pinto

observed that the drusen had nothing in common with the lamina vitrea, and were perfectly separated from it.

In one only of Rumschewitsch's cases was the lamina vitrea thickened, and then only in the peripheral zone. In the other cases the lamina was reduced in thickness.

Rumschewitsch believes that the known facts are sufficient to show that drusen formation is entirely independent of any coincident process or involvement of the lamina vitrea.

Thickening of the lamina vitrea and drusen formation may both be senile changes. Aside from this drusen formation may be a pathological process, upon which age has no influence. Alt, for example, found drusen in a twelve-vear-old child.

Pathologically they have been observed in syphilitic inflammation of the uveal tract (Fuchs), chronic glaucoma (Birnbacher and Czermack), pseudo-glioma (Schieck), incomplete phthisis bulbi, from suppuration of the cornea (Pagenstecher and Author), pigment degeneration of the retina (Leber), and, finally, from accidental or operative traumatism. W. T. S.

Keratitis Punctata.

Jocos, R. (Die Ophthalmologische Klinik, February 20th, 1905). There is considerable difference of opinion among authors as to the exact form of corneal disease that should be called keratitis punctata. The best known and most frequent variety of so-called keratitis punctata is, in fact, not an inflammation of the cornea at all, but appears in the course of a serous iritis or irido-chorioiditis, and consists of a deposit of plastic exudate upon the posterior surface of the cornea.

The corneal involvement was described by Mauthner under the name of keratitis punctata, and by Hock as keratitis punctiformis. The proper classification of this disease under corneal affections is not clear. It is questionable whether or not this variety of keratitis is an accompaniment of iritis and iridochorioiditis.

DeWecker and Panas say that it is not, Truc and Valude say that it is. According to the latter authors, Mauthner observed his cases of keratitis punctata principally in the course of syphilitic irido-cyclitis.

They have also described a keratitis profunda following changes in the anterior chamber and serous iritis. In this keratitis, the deeper corneal layers are gray and cloudy, and especially characteristic is a gray-yellow sprinkling in the endothelium layer. Whether this later change in the endothelium layer

is from within or is a deposit upon the posterior surface is an open question.

Jocqs believes that Mauthner's keratitis punctata is not a separate disease, but rather a variety of parenchymatous keratitis. Instead of the cornea becoming, as is usually the case, uniformly cloudy, small gray-yellow points exist which sometimes remain isolated and sometimes coalesce. Jocqs finds this kind of parenchymatous keratitis not in hereditary syphilis, but in cachectic and dyscrasic individuals, and also in scrofulous subjects, and those threatened with tuberculosis.

A case exhibiting this variety is described. The third variety of keratitis punctata is that clinically described by Fuchs, and anatomically described by Nuel. This form Jocqs believes is the one, and the only one, to which the name should be given. Two cases are reported.

The points are 6×10 mm. in diameter, and lie in the substantia propria of the cornea, but nearer the anterior surface. The epithelium overlying the points is slightly roughened. There is no iritis; the aqueous and virtreous are normally transparent. Acquired syphilis is the ascribed cause in the first case, and hereditary syphilis, although not established, is the probably cause in the second case.

The last variety of keratitis punctata is well characterized, and easily diagnosed from the parenchymatous form and from Descemetitis. It develops rapidly with photophobia and symptoms of irritation. The uveal tract is not affected. The spots are distinct, round, and situated in the substantia propria nearer the anterior surface. The duration is short and the prognosis is good. The process is best influenced locally by dionin and massage with yellow ointment.

W. T. S.

Are ink-infected Wounds of the Eye Dangerous?

HAASS (Wochenschrift für Therapie und Hygiene des Auges, February 2nd, 1905). Ink, as commonly used, would scarcely seem to be aseptic, and it would naturally be supposed that injuries to the eye from pens, etc., covered not only with ink, but with many other septic substances, would be dangerous. This is, however, not necessarily the case. Haass cites a case of Oppenheimer's, and two of his own of this kind of injury, which progressed to complete recovery without any signs of danger or infection.

Haass believes that ink, which necessarily contains many pathogenic germs, must posses a strong bactericidal action,

otherwise these cases of severe injury would not have recovered so promptly.

Caledoli experimented with ink and its action upon bacteria. He found that typhoid bacilli placed in ordinary black ink could not be found after fifteen minutes. Pyogenic bacteria placed in a certain kind of ink disappeared in fifteen minutes; in other varieties it required a longer time, sometimes eight hours. Tubercle bacilli placed in ordinary black ink were living and active for four days.

W. T. S.

ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

RV

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The Role of Nasal Troubles in Epiphora.

Gelle (Arch. Intern. Laryn, Otol. et Rhin., 1904) has made rhinological examinations in 100 cases of lacrimation, occurring in the clinic of DeLapersonne. He came to the conclusion that affection of the nasal cavity frequently formed the basis of these cases of epiphora; and 'this conclusion is fully warranted from his table. He found a normal condition in 37 cases; hydrorrhea nasalis, ? cases; mucous polyps, 2 cases; hypertrophy of the lower turbinals, 15 cases; hypertrophic rhinitis, 4 cases; purulent rhinitis, 10 cases; ozena, 6 cases; hydrorrhea nasalis, 2 cases; mucous polyps, 2 cases; tertiary syphilis, 6 cases: anemia (without other findings). 1 case: tuberculosis, 2 cases. Gelle is of the opinion that the transmission of ocular complications in existing nasal affections usually occurs by infection. While Lubet-Barbon gives a good prognosis in even the more severe cases. Gelle's conclusions are not so cheerful. For instance, the former in 7 cases of epiphora from co-existing hypertrophic rhinitis, was able to secure a favorable outcome in all 7 by galvano-caustic treatment; Gelle, in 19 similar cases, similarly treated, was unable to secure any result in any of the cases.

In many of the other cases, of less severe character, the ordinary treatment secured good results both as regards the nasal affections and secondarily as regards the epiphora.

Variations in Ocular Tension Modified by Experimental Changes in Blood Density.

CANTONNET (Arch. d'Ophtal., 1904, p. 193) investigated the influence of the concentration of the blood upon the tension of the eye by experiments upon rabbits, in whom glaucoma had been artificially produced in one eye by injections into

the vitreous. He injected, subcutaneous or intravenous, variout strong solutions of common salt, Glauber's salt or sugar, and both before and after ligature of the renal vessels. The ocular tension was estimated by the relative bulging of the limbus to an opposite point, by means of a fine thread.

These measurements were made at half or one hour intervals, for periods from three to five hours. They gave six forms of variations in tension (which are shown graphically.)

In the beginning there was a lowering of the tension, and after some fluctuations, a return finally to the same height as at the commencement. The ligation of the renal vessels caused a lowering of the tension. The range of the variations was greater when the injections were made before the ligation of the renal vessels, than when made after. The strongest fluctuations of all were in the artificially glaucomatous eyes; and in the experiments in which concentrated solutions were injected intra-venously.

Experimental Effects of the Electric Light Upon the Eye.

METTEY (Arch. d'Ophtal., 1,04, p. 207) made a series of experiments upon dogs and rabbits, keeping the arc-light directed upon one eye for a total of 50 to 90 minutes, with frequent interruptions. The other eye served as a control.

With those retinas treated by the method of Nissl or Bethe he found no alterations, either in pigment, ganglion cells, or layer of rods and cones. On the other hand, in those treated by the Marchi method, the optic nerves showed a breaking down of the myelin into dust-line droplets. With short exposure this change reached 6 mm. back of the papilla; with the longest exposure this alteration reached nearly to the chiasma.

Whether these changes were due to the action of the light rays, or to the chemical rays, or to both could not be determined. With the interposition of a red glass during the exposure these changes did not occur. But the red glass cuts out both chemical rays and a part of the light rays; and so is not conclusive.

[A practical deduction from the experiments would seem to be that red glasses would be of service to those working exposed to long or frequent looking at bright (arc) electric lights.]

Surgical Intervention in Ocular Motor Troubles.

LANDOLT (Archiv. d'Ophtal., 1904, p. 257) has gathered

in this article practically a summary of his numerous former essays on the handling of muscular anomalies of the eye, based upon the most careful consideration of the anatomical and physiological conditions. He recommends, as is well known, the operation of advancement to the almost complete exclusion of the operation of tenotomy (recession.) This is particularly true in the cases of concomitant squint in which binocular vision may still be reckoned upon, and in the cases of paralytic squint. He emphasizes its great advantages, compared to the operation of tenotomy, based upon false premises. He especially combats the assumption that by a tenotomy only an excess of muscle action is removed. This last is only relatively too strong; and will become too weak when later the innervation impulse becomes less, after the tenotomy. Then secondary squint may supervene.

According to Landolt a tenotomy is to be regarded exactly as a paresis with all its resulting phenomena; while an advancement means exactly the contrary. From these premises naturally develop the indications for its employment.

Operation for Total Trichiasis.

CANGE and BEUTAMI (Arch. d'Ophtal., 1904, p. 220) propose a modification of the trichiasis operation, for severe cases. They make two longitudinal bridge-flaps, each 4 mm. wide. The lower contains the lid margin, with the cilia; the upper, immediately adjacent to it, is dissected up as thin as possible.

These two are then made to actually change places. The lower is lifted and the upper shoved down beneath it. This upper—now the lower—has its lower edge sewed to the marginal mucous edge. The lower—now the upper—carrying the cilia, has its upper edge sewed to the skin edge left above. A fine suture or two may fix the edges of these two in good apposition and keep them so. At the ends, where they cross, the epidermis is soon shed, and the two flaps grow together. The primary thick lid border that results later thins down completely.

They report 5 cases in which the result was very satisfactory and apparently permanent.

Pulsating Exophthalmos from an Ethmoidal Myxo-Sarcoma.

VAN DUYSE (Arch. d'Ophtal., 1904, p. 288) reports a case of a tumor pushing from the ethmoid and crowding the eyeball forward, outward and downward; but without interfering much with its movements or impairing its sight. At the

inner-upper orbital margin was felt a pulsation synchronous with the radial pulse; and there was to be heard a distinct bruit. These symptoms diminished on compression of the carotid, and disappeared after their ligation upon both sides.

Later the patient died, with symptoms of bulbar paralysis. The autopsy showed a myxo-fibro-sarcoma, with the primary tumor evidently in the ethmoidal cells. By displacement and partial absorption of the bony walls it had invaded neighboring cavities. In the right anterior fossa was an extension the size of an egg, with a chestnut-sized growth in the left fossa. There were a number of small growths in the middle fossa, and an almond-sized growth on the left side of the pons. The interesting and deceptive symptoms of pulsation and bruit were evidently caused by the transmission by the half fluid contents of the tumor of the impulses from the anterior and posterior ethmoidal vessels, together with their connections with the new vessels in the tumor; their number here having the same effect as larger size would in other positions.

With these ethmoidal new growths there is usually early appearance of orbital complications; and often the exophthalmos is the first symptom.

Exophthaimic Goitre Causing Loss of the Eyebail.

Delapersonne (Soc. d'Ophtal. de Paris, March, 1904) presented a patient, aged 35, with Basedow's disease; in whom there had occurred corneal ulceration in the right eye, resulting in atrophy of the eyeball. He did not regard the corneal affection as due to the lagophthalmos, nor to trophic disturbances, nor to infrequent closure of the lids—the explanations most usually given. He thought it more probable that the corneal ulceration was a result of the existing toxemia, following the altered activity of the secretion of the thyroid gland. He thought also that the ocular muscular paralysis that occurs in Basedow's disease, and which many regard as a proof of the bulbar seat of the disease, could be the result of a peripheral toxic neuritis.

Giaucomatous Form of Tubercular Choriolditis.

DUPUY-DUTEMPS (Arch. d'Ophtal., 1904, p. 309) observed a tubercular chorioiditis in a girl of 6; beginning at the macula region and spreading over the greater portion of the chorioid. There soon followed detachment of the retina, rapidly succeeded by greatly increased tension, and resulting in a staphy-

lomatous bulging of the sclera. Finally there supervened a mild attack of iritis.

Later there developed a "cold" (tubercular) abscess of the hip.

This clinical picture is typical, as the reported cases of other observers also show. Of diagnostic importance is the age between 6 and 20: that this form of tuberculosis is seldom primary, as is shown by the involvement in the case above: the rapid growth the chorioidal of increased tension (although according to most observations of intra-ocular tuberculosis be noted); the rapidly following bulging of the sclera: and finally the appearance of iritis. In doubtful cases one may make an injection of the aqueous humor into a guinea-pig's eve.

Treatment of Glaucoma of Intermittent Form.

ABADIE (Annales d'Ocul., T. 131, p. 271) again emphasizes the great difficulty which the diagnosis of certain forms of glaucoma presents. These are those early manifestations of glaucoma appearing as trigeminal neuralgia; transient loss of sight; or the appearance of colored rings.

These prodromal stages of glaucoma cease only with the earliest possible performance of an iridectomy; while with the use alone of miotics certain blindness stands in prospect.

Abadie, however, was not able to follow the cases treated only with miotics, (at least not many of them); for when strongly impressed with the necessity of an iridectomy, most of these cases would not again present themselves.

ABSTRACTS FROM ITALIAN OPHTHALMIC

RV

V. L. RAIA, M. D.,

PROVIDENCE, R. I.

Extirpation of the Sac and Nasolacrimal Canal.

Basso (Annali d'Ottalmologia, Fasc. 7, 8, 9, 1904). The extirpation of the sac sometimes gives imperfect results, the process of cicatrization being disturbed by the accumulation of exudates in the cavity below. For this reason the author removes the sac and the nasal canal in toto and proves with the report of many cases that the operation not only is successful, but also is easy to perform. He says that by removing the sac with the nasal canal a better opportunity is offered to study the pathology of the lacrimal apparatus, the knowledge of which is still somewhat obscure in spite of the important researches by Cirincione, Cartuferi and Duvigneaud.

The author performs the operation by making an incision in a vertical direction about 25 mm., beginning 2 mm. above the internal palpebral ligament, keeping the incision well dilated; and, after having separated the sac from the lacrimal fossa and the soft tissues with a spatula or blunt-pointed knife, he detaches the nasal canal from the bones and finally unites the edges of the wound with sutures. Of all the specimens collected the author has examined microscopically only four which correspond to the common varieties of alterations encountered in practice. These varieties are: 1—Chronic dacryocystitis without dilatation of the sac with normal pericystic tissue and permeable nasal canal; 2—Chronic dacryocystitis with dilatation of the sac, no alterations of the pericvstic tissues and impermeable nasal canal: 3-Chronic dacryocystitis with lacrimal tumor, alteration of the soft parts surrounding the sac, lacrimal fistula and absolute obstruction of the nasal canal: 4—Mucocele with obliteration of the nasal canal. While, in the first variety, he has observed hyperplasia of the mucosa under the form of granulations without any other alteration, in the others he has found mucous hyperplasia and cicatricial tissue under the mucous membrane with more or less obstruction of the nasal canal, which may be transformed into a regular fibrous cord separated from the bony wall. The dilatation of the sac is in inverse ratio to the permeability of the nasolacrimal canal, the expansion always taking place on its external surface where the resistance is less.

Diseases of the Optic Nerve and Retina in Relation to the Alterations of the Circulatory and Uropoietic System—Considerations of General Physiopathology and Pathological Histology.

ORLANDINI (Annali d'Ottamologia, Fasc. 7, 8 and 9, 1904.) The circulatory and proposetic systems are in such a relation that any disturbance of one is reflected on the other. If the function of the kidneys is greatly diminished, the elimination of the products of metabolism is also decreased and the blood. which becomes impregnated with them, rushes toward the diseased organ in larger quantity in order to get rid of these deleterious substances. The heart consequently has to work more and becomes hypertrophic. On the other hand, heart affections produce passive congestion in the kidneys and impairment of their secretion. Affections of the optic nerve and retina in organic cardiac troubles were considered the consequence of passive hyperemia in the ocular membranes. The author, after careful observation of clinical cases, has come to a different conclusion. He is of the opinion that cardiac stasis in the kidneys is responsible for the neuroretinal alterations by diminishing the excretion of the products of metabolism, which remain in the circulation and produce injurious effects on different tissues, specially on the retinal vessels. While, in albuminuric retinitis, the hemorrhages of the retina are considered by the majority of the writers as the product of increased blood-pressure due to hypertrophy of the left ventricle, he has proved by clinical observations and pathological researches that they are caused more by alterations of the blood-vessels than by increased action of the heart. The author has been able to follow cases of cardiac diseases with hypertrophy, associated with retinitis, up to the very end of the patient's life, and has noticed hemorrhages take place in the retina only a short time before death, when the strength of the heart had become very weak and the blood pressure very low. To study the relations of renal inflammation to neuroretinal affections. Dr. Orlandini has artificially

produced acute nephritis in rabbits by injecting a 2% solution of nitrate of silver in the parenchyma of one kidney, extirpating the other. As the disease became more intense, and the quantity of the urine decreased, symptoms of retinitis developed and were observed in life with the ophthalmoscope, and confirmed microscopically after death. From the pathological and clinical examinations he makes the following conclusions:

- 1. Heart disease does not affect the optic nerve and retina by producing stasis in the circulation, but by altering the renal substances and decreasing the elimination of excrementitious substances which accumulate in the blood.
- 2. Albuminuric retinitis of chronic interstitial nephritis ordinarily presents no symptoms of inflammation, but manifestations due to grave alterations in the walls of the blood vessels with spots of necrobiosis and degeneration around the macular region.
- 3. Forms of acute nephritis are apt to produce severe alterations of the retina due to acute intoxication of the blood. These retinal affections have all the appearance of inflammatory processes, being accompanied by infiltration of exudates in the different layers of the retina.
- 4. Hemorrhages of the retina are not caused exclusively by increased blood-pressure due to hypertrophy of the heart, but also by preëxisting alterations of the blood-vessels.

Observations on Bilateral Congenital Aniridia with Ectopia of the

NOE SCALINCI (Annali d'Ottalmologia. Fasc. 7, 8 and 9, 1904). The anomaly under consideration is very rare, only about one hundred cases having been reported since Baratta for the first time in 1818, described its symptoms with a masterly accuracy. While some writers are of the opinion that a narrow band of the iris is always present, the four observations, the only ones that could be observed among many thousand cases in ten years, show that a complete absence of the membrane is the rule. In the first, a bilateral congenital aniridia with ectopia of the opaque lenses upward, an acute attack of glaucoma had complicated the defect, perfectly controlled by instillations of eserin. This fact, according to Dr. Scalinci, is a proof that eserin or piloscarpin reduces the intraocular tension, not by producing miosis, but by constricting the blood-vessels of the interior of the eye. The second observation presented congenital bilateral aniridia with ectopia

of the transparent lenses upward. It is remarkable here that, although the power of accommodation was expected to be found very weak, as is the case in ectopia of the lenses with rupture of the zonula, the patient could see very distinctly a small object at 10 centimeters from the eves. The author does not agree with those writers who consider such displacements of the lens, regular dislocations from which the acute attacks of glaucoma reported in several cases of aniridia would be produced. The other two observations only show the influence of heredity and the relation of the anomalies to syphilitic infection. Coloboma of the iris and aniridia are considered by Scalinci as the sante pathological process, only differing in degree, and due not to an arrest of development, but to a regular inflammatory action before the ocular tissues are well developed.

On the Pathogenesis of Toxic Optic Neuritis. State of Our Knowledge. Critical Considerations. New Interpretation.

NOE SCALINCI (Annali d'Ottalmologia, Fasc. 7, 8 and 9, 1904). Samelsohn, in 1882, recognized as the principal pathological factor of retrobulbar neuritis the hyperplasia of the connective tissue around the papillo-macular bundle with a consecutive atrophy of the same. Subsequent researches of other investigators confirmed these views, and for several years the majority considered toxic amblyopia a regular interstitial neuritis. Sachs, in 1893, denied any participation of the connective tissue and spoke of the disease as a primary atrophy of the nervous fibres, while Nuel, in 1896, announced that the central scotoma in alcohol and tobacco amblyopia was due to atrophy of the cells of the ganglionic layer of the macula, and that the affection of the optic nerve was secondary. Many experiments made on animals with alcohol, though not satisfactory, appeared to agree with the above theory, the primary alterations having been found always in the retina. The poison, according to some, acts on the connective tissue, producing its proliferation and a consecutive atrophy of the nervous fibres; according to others it acts directly on the nervous elements. There is another theory which considers the disease as the consequence of nutritive disorders due to primary alterations of the blood-vessels. The atrophy of the papillo-macular bundle, which gives the central scotoma, has received different interpretations. The author lays great stress on the disposition of the central artery. This in man enters the optic nerve at some distance behind the bulbus, passes through the fibres of the papillo-macular bundle, and furnishes a rich capillary net for the nourishment of the same. Consequently, any poison circulating in the blood finds here a favorable field for action, the macular bundle especially resenting the bad effects, composed as it is of fibres of higher function. In rabbits and dogs the same artery having no relation with the orbital tract of the optic nerve, the alterations produced by experimental poisoning have been always found in the retina, while in monkeys, the anatomical conditions of which resemble those of man, a regular retrobulbar neuritis has been observed.

Suppression of the Bandage in Cataract Extraction.

BOCCHI (Annali d'Ottalmologia, Fasc. 10 and 11, 1904). The suppression of the bandage in cataract operation, apparently a regress in ocular antisepsis, has not been accepted with favor by the ophthalmologists in general. Yet it has been proved that it sensibly increases the germs of the conjunctiva and exerts with its pressure a bad influence on the corneal wound. The author has lately used exclusively Fuchs's binocular wire net, and feels very much pleased with the results. The eye is effectively protected from external injuries, is free from pressure, the iris is less liable to prolapse, and the healing process is uninterrupted and more rapid. The patients may be allowed to walk after the third day and are ordinarily discharged after the eighth day.

A Case of Subretinal Cysticercus Successfully Removed. Contribution to the Diagnosis, Localization and Operation. of Endocular Cysticercus.

BARDELLI (Annali d'Ottalmologia, Fasc. 10 and 11, 1904). The patient, a woman 28 years of age, came to the eye clinic in Florence complaining of failing vision. The ophthalmoscope revealed, outside and below the level of the macula, an elevation of the retina under the form of a vesicle for which the diagnosis of subretinal cysticercus was made. The author, while looking at the pupil with a concave mirror at 50 centimeters, enjoining immobility of the eyes and being careful not to change the position of the instrument, observed the appearance and disappearance of shade and light, a phenomenon which Bardelli attributes to the movement of the parasite and is of great diagnostic value. To make the scleral incision coincide with the exact location of the cysticercus, the position of the scotoma, of which the patient complained, was carefully studied by Prof. Guaita on the chart. As it was found to be 45° from the point of fixation, considering the circumference of the eve 7½ centimeters, the parasite was located at 28 mm. behind the cornea and 9½ mm. from the posterior pole of the eye, and was easily removed.

REPORT OF THE THIRTY-FIRST MEETING OF THE OPTHALMOLOGICAL CONGRESS AT HEIDELBERG. 1903.

(Edited by A. Wagenmann of Jena. Published by Bergman of Wiesbaden, 1904.)

TRANSLATED BY CLARENCE LOEB, A. M., M. D.

FIRST SCIENTIFIC MEETING, SEPTEMBER 14, 1903.

CHAIRMAN, JESSOP, LONDON.

The Reattachment of a Detachment of the Retina. By W. Uhthoff. Breslau.

In a patient, 17 years of age, who suffered with chronic nephritis and retinitis albuminurica, the author observed the reattachment, within two months, of an entensive ablatio retinæ, after 21 liters of edema fluid had been drained off. The reattached retina resumed, in part, its function, although there had been complete blindness.

The anatomic examination showed that large areas had reattached themselves by a simple disappearance of the subretinal exudate, and that the rods and cones were in fairly good condition. Secondly, the replacement of the retina was caused over a considerable area by a thin layer of organized exudate. Here thin connective tissue strands caused the connection between retina and chorioid, or else circumscribed proliferations, which corresponded to the white bands or clump-like bodies seen with the ophthalmoscope. The pigment layer remained attached to the chorioid throughout the entire area of detachment. Neither rupture of the retina nor shrinking of the vitreous were visible.

The author made observations on a second case, whose anatomic findings have already been reported by Mueglich.

Altogether, the author has seen 34 cases (8%) of reattachment of the detached retina, whose (ophthalmoscopic) appearance he discussed.

In the discussion, Elschnig observed that he had seen ablatio retina in 10% of retinitis albuminuria cases. Deutsch-

MANN confirmed Uhthoff's observations; with his methods, he had obtained 23% of cures. Uhthoff said that only 1/4 of his 34 cured cases were treated by operation.

2. Trachomatous Conjunctival Ulcers, Epitheliai Involution and Cyst-Formation in Trachoma. By E. Rachimann, Weimar.

The follicle is the primary manifestation of trachoma; the other changes are secondary. It has the tendency to rupture Frequently the exfoliation of its surface is followed by ulceration and defects in the tissue, which may penetrate into the submucous stratum.

The author observed that the epithelial plugs and bars, and in part, the new-formed gland, are in causal relationship with these ulcerative defects of the follicles.

Discussion by Mueller, Sattler, Hoppe, Goldzieher, Rafhimann

Sympathetic Ophthaimia; Experiments in Regard to the Action of Invisible Micro-organisms in the Eye. By Paul Roemer, Wuezburg.

The author takes the position that sympathetic iridocyclitis takes place via the blood current. The germs are perhaps to be sought among micro-organisms which are invisible by our present methods. Schirmer and Deutschmann spoke in the discussion.

4. Processes of Immunity in the Living Eye. By P. Roemer.

(a) Short report on the present status of the serum therapy of ulcus serpens.

Of 68 cases so treated, 20 in the first stages of infiltration were completely cured; of the other 48, 38 (80 per cent.) were cured. The prophylactic use has special value.

- (b) The physiology of corneal nourishment. Normally, only scant traces of anti-bodies are found in the cornea; during inflammation the number is plainly increased.
- (c) A new therapy in hemophthalmus. The introduction of hemotolytic immune serum into the vitreous quickly dissolves large masses of blood.

Contribution to the Knowledge of Lues of the Fundus. By E. Kruckmann. Leipsic.

In the earlier stages of lues, there is a hyperemia of the optic disc, together with an inflammatory edema which is comparable to macular symptoms elsewhere. The changes heal with no disturbance of function. The author mentions

the rare papilloretinitis and retinitis of this stage, as well as the retinitis circumpapillaris, which likewise heal without any ophthalmoscopic or functional changes.

In the chorioid, the author separates the diffuse early manifestations, from the later, focal ones. In the latter, he divides the disseminated from the clustered forms. The chorioidal affections are in no way characteristic for lues.

The author makes a few remarks on the so-called central, relapsing retinitis and on gummata of the chorioid.

Discussion: Elschnig, Uhthoff, Laqueur.

6. Fungus Concretions in the Tear Ducts. By M. zur Nedden, Bonn.

Several different members of the streptothrix group may take part in forming the concrements, varying from simple saprophytes to true actinomycoses. The disease is always benign, as it is simply a foreign body irritation and on this account the name, *Streptothricia* (Axenfeld), is to be preferred to actinomycosis.

7. Disease of the Lacrimal Gland. By H. V. Kruedener, Riga.

The author reports four cases of inflammation of the lacrimal gland. The first, where no etiology could be found, presented the picture of a tumor. In the second case, a diabetic patient, the pains which would suddenly appear, were very severe, as they were also in the third case, where the pneumococcus was found. The fourth case, was an abscess, caused by the streptococcus and the influenza bacillus.

In addition, the author reported a case of malposition of the gland in trachoma.

8. Choked-Disc in Cysticercus Cerebri. By E. Jacoby, Bromberg.

The author reported two cases from the clinic at Breslau, where, in multilobulated cysticercus of the base of the brain, there were choked-discs. Since choked-disc is very rare in brain cysticercus, the circumscription of space and the inflammatory theories cannot hold good, but these are to be explained by the appearance of an edema, which affected the disc. This edema could have been caused by an endarteritis of the cranial arteries, similar to the syphilitic in reported cases.

9. Cure of Peripheral Irritative Conditions of Sensory and Motor Nerves. By Schloesser, Munich.

The author cured 8 cases of tic convulsif, which had lasted ½ to 30 years, by injection of alcohol into the trunk of the facial at the mastoid. He had a transient paraysis of the facial, lasting from ½ to 1 hour. When the action was too weak, the injection was repeated; when the paralysis was too intense, lasting 2½ to 4½ months in two cases, the corresponding treatment was necessary. Relapses were present in two cases. necessitating subsequent injections. The somewhat complicated technique must be read in the original.

In the discussion, NIEDEN observed that he had obtained similar favorable results by Hueter's injection of 1% carbolic acid into the nerve-sheath. SCHLOESSER regarded the technique as too complicated. STRAUB and AUGSTEIN, also, spoke.

Clinical Observations on Spasm and Tone of the Accommodation Apparatus. By Pfalz, Duesseldorf.

In agreement with Donders, Hirschberg, and Schnabel, the author did not believe in a cramp of the accommodation. The difference in refraction between an atropinised and non-atropinised eye can be explained by the fact that, when the pupil is dilated, the influence of the less convex portion of cornea and lens is to lessen the refraction (Hess). Atropin also paralyses the normal tone of the muscles of accommodation, which, however, must also be corrected. Author discusses this tone at length, stating that it is sometimes higher in myopic eyes also, and thus causes, rather than simulates, a higher degree of myopia. He explains this hypertonus as a reflex of accommodation, which appeared earlier in near vision, and which, when myopia had appeared, was retained without reason. The best remedy is suitable glasses.

In astigmatic accommodation, the author assumes an astigmatic hypertonus, which neutralises the astigmatism for distance, while asthenopic complaints frequently compel a correction of the astigmatism for near vision.

In the discussion, Hoederath reported a case of spasm of the accommodation, where, with an hypermetropia of 2 D., near vision was accomplished only by —10.0 D. Augstein called attention to spasm of accommodation in neurasthenia. Koenigshoefer remarked that hypertonus did not differ much from spasm of accommodation.

SECOND SCIENTIFIC MEETING. SEPTEMBER 15.

CHAIRMAN, CZERMAK, PRAGUE,

11. Traumatic Corneal Diseases, with Special Reference to Detachments of the Epithelium. By A. Peters. Rostock.

The detachability of the epithelium in corneal erosions represents the mildest degree of vesicle formation. Similar conditions are found in herpes corneæ, keratitis disciformis and ulcus corneæ serpens. The vesicle formation is due to an edema of the cornea, and the latter to a traumatic lesion of the nerve. If this is deep, it affects the parenchyma, where it assumes a disc form, corresponding to the area of the injured nerve-endings. Therefore, in keratitis disciformis, the assumption of an infection is unnecessary. In ulcus serpens, the edema prepares a path for the spread of the inflammation and the noxious bacterial elements find a damaged tissue.

In the discussion, SCHIRMER, v. HIPPEL, FRANKE, and LEBER spoke against the views of the author.

12. Subconjunctival Extraction (Extraction with a Conjunctival Fiap). By W. Czermak, Prague.

While the author originally made, in subconjunctival extraction, the conjunctival flap at the same time as the corneal section, he later, in order to have the flap broader, made the conjunctival section first. The iridectomy was necessary. To avoid this, he now employs a third method, which he calls subconjunctival extraction with a conjunctival pocket.

Taking the conjunctiva 1.5 to 2 mm. from the limbus, he makes a cut in the horizontal meridian at the corneal margin, pushes the knife, pointed downwards, in as far as the pupil, and in a quiet patient, pushes it out on the opposite side, though this is unnecessary.

When the knife is withdrawn, the unthickened capsule can be opened at the same time. Then, with the scissors, starting at the entrance of the knife, a section is made vertically downwards in the conjunctiva, the conjunctiva is undermined inwards, and then with a Louis's scissors, one blade of which is in the chamber and the other under the conjunctiva, the corneal section is completed in 3 to 4 cuts, as far as the nasal end of the horizontal meridian. Then comes the opening of the capsule, and evacuation of the cataract, as usually done. The pupil usually remains round and can easily be adjusted by the spatula. Finally a conjunctival

suture is employed. Strong applications of adrenalin are necessary.

To the advantages of other subconjunctival methods are added, complete covering of the wound by conjunctiva, the position of the wound downwards, difficulty of separation of lips of the wound, and the retention of a round pupil.

While the earlier methods were thought of in especially difficult cases, the author thought this method could be used in all kinds of cases.

13. The Technique of Optic Iridectomy. By Axenfeld, Freiburg.

The author recommended the use of iris-needles, which makes the operation painless. Kuhnt, Mueller and Czermak spoke favorably, as also Rogmann, Schoenemann, Pfalz and Gutmann

14. The Diagnosis of Scientis Posterior. By A. Wagenmann, Jena.

In an eye which for some time had been blind on account of detached retina, the cause of certain severe symptoms that pointed to tumor of the chorioid was shown to be a scleritis posterior. The diagnosis is especially difficult in eyes that had previously undergone changes.

15. Experiments with Ultraviolet Light. By E. Hertel, Jena.

Magnesium light is the best for experimental purposes. It is decidedly bactericidal, but does not penetrate deeply into the tissues, though in a long seance it will kill bacteria through the entire thickness of the cornea. It does not act through the lens. The changes in the tissues so treated consist in a proliferation of the fixed tissue cells.

16. The Action of the Ultraviolet Rays on the Retina. By Birch-Hirschfeld. Leipsic.

The author investigated the action of the ultraviolet light on the retina, after removal of the lens. He found that the ability of the eye to distinguish the ultraviolet rays increased. Additional experiments showed that these rays cause on the retina of aphakic eyes distinct, characteristic mophologic disturbances. They cause a solution of the chromatic substance in the nerve cells of the retina, both the nuclear and ganglion cells.

In the dazzling of the sunlight, the ultraviolet rays play

no part, but they do in the dazzling of lightning, electric light, snow-blindness and erythropsia.

In the discussion Herzoc spoke of experiments he had made on opacities in the lens due to the influence of light. The cause of the opacities was due entirely to light rays and not at all to heat rays.

VON HIPPEL, RAEHLMANN, HOPPE also spoke.

17. Contributions to the Therapy of Gonorrhoic Ulcerations of the Cornea. By W. Goldzieher, Budapest.

The manner of treatment consists in early covering of the loss of substance in conjunctivitis blenorrhoica adultorum with the bleeding detached conjunctiva bulbi, after the Schoeler-Kuhnt method. Even in the worst cases, very good results were obtained.

In the discussion, DUFOUR remarked that he had obtained very good results from subconjunctival sublimate injections. KUHNT described the method of covering aunular marginal ulcers with conjunctiva.

THIRD SCIENTIFIC MEETING, SEPTEMBER 16.

CHAIRMAN, V. SCHROEDER, ST. PETERSBURG.

18. The Role of Length-value in the Perception of Bodies. By L. Heine, Breslau.

The author comes to the following results: The perception of depth is a function of the vertical meridians of both eyes. True longitudinal, steroptical half-pictures give no perception of depth. Apparent longitudinal steroptical half-pictures cause perception of depth only in so far as they include horizontal parts. Longitudinal things which, without possessing horizontal parts, appear in steroptical half-pictures as congruent, can suggest volumes if in their outlines they are derived from bodies with 3 dimensions.

A Rare Disease of the Retina. By E. von Hippel, Heidelberg.

Communications of two cases which are identical with those described by Fuchs as aneurysma arteriovenosum traumaticum (Archiv. für Augenheilk., Bd. XI). The explanation of Fuchs, that a trauma caused rupture of a retinal artery and vein, whereupon the blood formed a saccular aneurysm, is not considered by the author to be correct, as in his case there was

no trauma. It was perhaps a tuberculosis of the retina, consisting of extensive endarteritic and endophlebitic disease of the retina.

In the discussion, SATTLER, WAGENMANN, BEST, MUELLER, and HERZOG reported similar cases.

The Ocular Symptoms of Paraphenylendiamin Poisoning, with Remarks on the Histology of the Lacrimal Gland. By Grunert. Tuebingen.

The paraphenylendiamin found in many hair dyes, caused in many persons an acute eczema of the portion of the scalp treated, also lacrimation, redness of the conjunctiva, chemosis and exophthalmus. It is either an idiosyncrasy, or a direct introduction into the circulation through a wound. The author poisoned dogs by subcutaneous injections, and obtained very very severe symptoms of poisoning. There was always chemosis and exophthalmus, with increase of the intra-ocular tension and increase in the secretion of tears, mucus and saliva.

Anatomically, there was, above all, a serous infiltration of the orbital tissues, with normal conditions of the bulbus; also intense brownish discoloration of the lacrimal gland and the nictitating membrane, by impregnation of the glandular protoplasm with brownish coloring matter. In the protoplasm of the cells are fine granules, which seem to be physiologic phenomena. Even the inner epithelium of the ducts of the lacrimal glands are colored, showing that they possess secretive powers.

New investigations in Regard to the Path of the Pupillary Reflexes. By G. Levinsohn, Berlin.

The question of the path of these reflexes is still an open one. The author speaks against Bach's theory, since his experiments have so many sources of error. According to his experiments, Bernheimer is correct in regarding the Westphal-Edinger nucleus as the center for the sphincter of the same side. He further found that in rabbits the pupil fibres that cross in the chiasm recross before they reach the sphincter nucleus, in its immediate vicinity.

In the discussion, BACH disagreed with the author.

Axenfeld stated that he had examined 4 persons executed by the guillotine 17 to 40 seconds after the execution. Pupillary reaction was found only 17 to 30 seconds after execution. The reaction did not appear when the medulla was cut for the exclusion of an inhibitory center.

22. Contribution to the Physiology of Retinal Movements. By Herzog, Berlin.

The author attempted to solve the question of the excitation of the retina, on the basis of the electro-magnetic light theory.

The maximal shortening of the cones, when the cone-myoids contract, occurs only after two minutes, even when the intensity of the light is at its greatest. This contraction therefore lasts too long to have a relationship with sensitiveness to light.

The contraction of the cones corresponds rather to the intensity of the light than to the color.

The rapidity of contraction seems proportional to the rapidity of vibration of the irritating light, and lessens the nearer one approaches the refrangible end of the spectum.

In addition to light, destruction of the brain and cord influences the cones by causing excessive elongation. Warmth and cold cause maximal contraction of the cones and migration of the pigment. This is caused by the reflex action of a physiologic irritation.

The possibility of applying the results of these investigations to the neuroepithelium of higher animals must be tested by further experiments.

23. The Etiology of Diseases of the Tear Sac. By L. Mueller, Vienna.

It is not correct to refer every lacrimal sac blennorrhea to a disease of the nose. This occurs only in about 2/3 of the cases. By investigations in trachoma the author found that the latter is frequently the cause of suppuration of the lacrimal sac. Of 35 cases observed, 16 showed the trachoma bacillus in the secretion from the sac. These patients suffered from trachoma, or had suffered with it. In the other 15 cases there was no trachoma, and twice there was found a pure culture of the diplococcus of Morax-Axenfeld.

The author frequently found in conjunctival trachoma a thickening of the walls of the sac. He recommends the extirpation of secreting lacrimal sacs in vicinities where trachoma is prevalent, since there remains for years infective material for its spread.

- 24. (a) Dependence of Many Functional, Nervous Disturbances
 Upon the Eye.
 - (b) A Case of Dependence of a Stubborn Purulent Middle-Ear Catarrh on Affection of the Eye. By C. Adeiheim, Moscow.

The author portrays the favorable result of correction of anomalies of refraction upon neuroses, and gives the result of such a correction and a galvanization of the eye upon a case of middle-ear catarrh.

 A New Ocular Symptom of Diffuse Scieroderma. By L. Logetschnikow. Mcscow.

The author has seen this rare symptom in a bilateral symmetrical immobility of the eyes.

26. A Tarsoplastic Operation for Coloboma Palpebrae. By M. Peschel, Frankfurt, a. M.

Use of a tarsal flap to cover the defect.

FIRST DEMONSTRATION SESSION, SEPT. 14.

CHAIRMAN, SCHLOESSER, MUNICH.

1.) DEUTSCHMANN, Hamburg; DEMONSTRATION OF PATIENT with Cured Ablatio Retinae.

In the seven patients, 8 eyes operated, the cure had existed 6 to 13 years, with, in part, a very good vision. They were treated with section, and injection of rabbit's vitreous. In recent detachments, this method was not used until all moderate methods had been without results; 23 to 26 per cent. of 174 operated eyes were cured.

In the discussion, MUELLER spoke against Deutschmann's method; von HIPPEL spoke favorably, and at the close, DEUTSCHMANN described his method (See abstract of the original in Centralblatt für Augenheilkunde).

- (2.) UHTHOFF; (3.) RAEHLMANN; (4.) ROEMER; (5.) KRUECKMANN; (6.) ZUR NEDDEN; (7.) KRUEDENER; (8.) JACOBY gave demonstrations of their papers.
- (9.) Peters, Rostock, demonstrated specimens of secondary leutic disease of the opticus, and of foreign body giant cells in sympathetic chorioiditis.
 - (10.) Heine, Breslau, observed in a patient in coma dia-

beticum a high degree of hypotonia; also demonstrated a simple epidiascope.

- (11.) AXENFELD Freiburg, i. B:-
- (a.) THE DIFFERENTIAL DIAGNOSIS BETWEEN EPITH-ELOMA AND ENDOTHELIOMA (CYLINDROMA) OF THE LACRIMAL GLAND.

The tumors of the lacrimal gland, which consist of epitheloid cell-nests with hyalin or pearlish concretions, have heretofore been classed as cylindromas, derivatives of the endothelium. The specimens presented (Dr. Shulze), show these concretions in true epithelial carcinoma of the gland. Therefore the diagnosis needs improvement.

(d.) SARCOMA OF THE SPHENOID CAVITY which very early attacked the orbit, especially the optic nerve in the bony canal.

The specimens show early metastases in the iris at a distance from the tumor. This speaks for the necessity of early enucleation in sarcoma of the iris.

- (c.) Microscopical Specimens of Acne Necrotica.
- (d.) SARCOMA OF THE SPHENOID CAVITY which very nearly attacked the orbit, especially the optic nerve in the bony canal.
 - (12.) PFALZ, Duesseldorf:-
 - (a.) Demonstration of an IMPROVED FINGER LENS.
- (b.) Demonstration of Receptacles for the Sterilization of Cutting Instruments.

The author approves highly of placing instruments in spirits of soap, for sterilization. He showed air tight glass receptacles

STRAUB and ELSCHNIG, in the discussion, expressed their satisfaction with this method of treating instruments.

(13.) STOCK, Freiburg. EXPERIMENTAL ENDOGENION TUBERCULOSIS OF THE EYES OF RABBITS.

Twelve to sixteen days after injection of virulent tubercle bacilli into the ear vein of rabbits, there appear chorioiditis disseminata and iritis, whose course is benign.

Only one case of iritis in man reacted to tuberculin injections, otherwise it did not, not even in cases clinically demonstrated to be tuberculosis. Therefore, either a local tuberculosis of the eye does not always react to tuberculin, or the same disease-picture can be caused by some other infection.

SECOND DEMONSTRATION SESSION, SEPT. 15.

CHAIRMAN, KRUECKMANN, LEIPZIG.

(14.) RANSOHOFF, Frankfurt a. M. DEMONSTRATION OF A PATIENT WITH A PECULIAR CONJUNCTIVAL DISEASE.

A fourteen-year-old boy had very hypertrophic follicles that had resisted all treatment for 8 years.

- (15.) WAGENMANN, Jena: ANGIOMA CAVERNOSUM CHORI-
- (16.) C. Hess, Wuerzburg; New Observations on Total Color-Blindness.

Against the theory of a blindness of the cones in the colorblind, there is the frequent lack of a defect in the field of vision corresponding to the fovea. In addition, Hess's experiments on total color-blind patients with objects that were completely formed in the foveal region gave similar or identical after-images to those of normal people. In the normal eye, the foveal irritation appears later and lasts a shorter time than extra-foveal. This is also found in the colorblind; therefore the foveal elements act normally. There is lacking every characteristic of the rods, which are assumed at this place by the theory spoken of.

Discussion by Uhthoff, Gruenert, von Hippel, and Raehlmann.

- (17.) Schloesser, Munich, demonstrated: (a) an electric apparatus for applying warmth to the eyes, consisting of a resistance coil (Glühdraht) between layers of asbestos; (b.) an improved magnet, which has been made stronger and more movable, in addition to some small improvements.
- (18.) L. Mueller, Vienna. Demonstration of Specimens of Secondary Glaucoma.
- (19.) TARTUFERI, Bologna. DEMONSTRATION OF MICROSCOPICAL. SPECIMENS.

The author attempted by means of a new metal impregnation to retain the tissue elements in a form true to life. Sections of the cornea, and of the pathological anatomy of the tear passages were shown.

- (20.) HARMS, Breslau, DEMONSTRATION OF MICROSCOPI-CAL SPECIMENS OF IRIDOCYCLITIS WITH DEPOSITS ON THE POSTERIOR SURFACE OF THE CORNEA (IRITIS SEROSA.)
- (21.) GRUENERT, Tuebingen, ILLUSTRATIONS TO HIS ARTICLE.
- (22.) NATANSON, MOSCOW: (a) REPORT OF THE ANATOMICAL INVESTIGATION OF TWO NEW CASES OF DOUBLE PERORATION OF THE EYE.

The foreign bodies lay in membranes consisting of the chorioid, episclera and orbital tissue, surrounded by exudate and connective tissue. The particles remaining in the eyes 8 weeks and 4 months caused extensive destruction.

- (b.) REPORT ON SPECIMENS OF TWO CASES OF BILATERAL MICROPHTHALMIA AND BULBAR CYSTS
- 23.) Schieck, Goettingen. The Genesis of the so-called Glands of the Vitelline Membrane.

The observations of the author come from a case of pseudoglioma. The vitelline membrane was seen sprinkled with beginning and completed excresences. The membrane itself did not take part in these formations. It was rather that swollen and degenerated pigment epithelium had assumed the form of glands. They lose their pigment and structure, to become transformed into a glassy mass.

(24.) ELSCHNIG, Vienna. REMARKS ON THE LIGHT RE-FLEX OF RETINAL ARTERIES.

Dimmer's theory, that the arterial light reflex comes from the anterior surface of the axial portion of the stream, can be experimentally disproved in man. The author adheres to the belief that the light reflex in arteries and veins comes from the anterior surface of the blood column, but that in arteries, the walls assist in forming the reflex.

- (25.) SCHWARTZ, Leipsic, demonstrated a PICTURE OF A PECULIAR MACULA HEMORRHAGE.
- (26.) Blessig, St. Petersburg, demonstrated Specimens of Fungus Concretions in the Tear Ducts.
- (27.) BECKER, Dresden, PRIMARY RETROBULBAR SQUA-MOUS EPITHELIUM CARCINOMA OF THE ORBIT.

Both tumors consisted of rich, fibrillar connective tissue in which numerous nests of cells were scattered. The differential diagnosis between carcinoma and alveolar sarcoma was made by the fact that it was a squamous epithelium carcinoma of the orbit that had taken its origin from a dermoid cyst.

ASSOCIATION OF CLINICAL ASSISTANTS OF WILLS' HOSPITAL

The second regular meeting of the association was held at the hospital on the first of February, 1905. Dr. George Robinson in the chair

Dr. Helen C. Upham read a paper calling attention to the absence of examinations for color-blindness in the motormen and conductors on suburban trolley lines. It was pointed out that many of the accidents occurring could be prevented by proper color signals recognized by the motormen. The colors red and green especially, she said, should be recognized by them. The tests should be made with wools or colored miniature lights, but as has been pointed out by Dr. Charles A. Oliver, they should be made under the actual conditions on the road and under atmospheric conditions. On many of the suburban lines a speed equalling that of the steam cars is attained. The cars rush through thickly populated neighborhoods with their human freight at the mercy of those who may or may not know the danger signals, no tests having been previously made. She believed that these men should be subjected to the same examination for acuity of vision and colors as is required of steam railways, ships, etc.

In the discussion, Dr. J. Hiland Dewey reminded the members that many of the accidents on a road occurred not as a result of color blindness but by an ignoring of the danger signals through carelessness of those who are responsible. Dr. John T. Krall thought that no matter if some employes were careless, and caused loss of life, care should be taken in selecting only those who had full acuity of vision in each eye and normal color perception in both eyes. The examination should be made only by those who are known to have normal color perception. He believed that the whole subject of examination of trolley car employes was a very important one.

Dr. James A. Kearney presented a case of so-called traumatic conjunctivitis, also a case of ulcer of the cornea in which dilation of the pupil had not been obtained until eserin had been used for a week followed by atropin.

Dr. Dewey exhibited five pieces of wood which he had re-

moved from the orbit of a child. Each piece measured about a centimeter long and ranged from one to three millimeters in diameter. The only history obtainable was that the child had run a stick against the eye while playing. The pieces were found situated between the eyeball and the outer wall of the orbit. They were deeply imbedded in the orbital tissues. At the time of presenting the paper the eye was in a healthy condition and the orbital wound had healed nicely. In the discussion, Dr. Robinson commented on the similarity in length of the various pieces, and the remarkable amount of wood which had been stored in the orbit of such a young subject. Dr. Dewey promised a full report of the case at a later date.

CONCERNING THE CONDUCT OF MEDICAL JOURNALS AND CONTROVERSIES.

By George M. Gould, M. D.,

PHILADELPHIA.

To the Editor of *The Annals of Ophthalmology*.

Dear Sir:—The following correspondence is self-explanatory:—

RE DEXTROCULARITY.

To the Editor of "Ophthalmology":-

Dr. Swan M. Burnett kindly writes calling my attention to the article of Dr. H. Kaiser published in the first volume of the Archives of Ophthalmology, 1869. Incidental to a discussion of binocular vision this author correctly sets forth the evident criticism of the statements of Helmholtz and Hering in reference to the Cyclopean eve, and advances the theory of what he calls "the prevailing eye." This is essentially the same as that which I have called "the dominant eye." I was unaware of Dr. Kaiser's study, and am delighted to learn of the confirmatory conclusions reached so long ago by a careful and scientific observer, and am glad to give him credit for the first statement of the truth of dextrocularity and sinistrocularity. The anatomic or physiologic basis and necessity for the theory was, however, not stated by Dr. Kaiser, and so his study has not received the recognition it deserved. Neither myself nor the members of the American Ophthalmological Society, present at the Atlantic City meeting, knew of it or we had forgotten it. Modern scientific literature has grown to such enormous proportions that none can hope to have knowledge of all the studies made even upon special subjects,—and particularly if not indexed and epitomized by later authors. Another illustration of this is most pertinent: On page 337 of Ophthalmology, Vol. 1, is an article by Majewsky which strangely repeats the arguments and illustrations of Dr. Kaiser's study made 34 years previously. Thus a second person independently comes to the conclusion of Kaiser as regards dextrocularity.

Permit me while upon this subject to thank Dr. Fridenberg for his contribution published in your first number of Oblithalmology. It was unkind of him to demolish the theory a second time, as he had already done it so thoroughly and urbanely at Atlantic City in one minute after he had first learned of it. He, also, evidently had not read the articles of Kaiser, Majewsky, and others. *The unfortunate collection of epithets made use of by Dr. Fridenberg and generally allowed publication by Ophthalmology would prevent me from making any reply, even if his logic, excellent of its kind, called for attention. He should not be at such pains to controvert an author whose article and personality he holds in such scorn as to characterize in these terms:—"Such assurance." "confusion," "cart before the horse" (many times repeated), "queer statements," wholesome statements," "evident inaccuracy," "absurd," "misstatements," "unsupported assertions," "inaccuracies of observation," "contradictory logic," "hasty conclusion," "dangerously visionary," fantastic assumption," "pseudo-science," "greater height of absurdity," "squander sight," "grasp at the shadow and lose the substance," "for the sake of a chimera juggle with a vital function," "risk incalculable harm," etc.* One guilty of the scientific, literary, and logical crimes thus implied hardly merits 17 octavo pages of criticism. It is a poor compliment to the readers of Obhthalmology, any one of whom may easily demonstrate the truth and value, scientifically and medically, of dextrocularity and sinistrocularity. Respectfully yours.

Geo. M. Gould.

January, 1905.

The sentences between these stars (), are those marked as necessary to excise.

G. M. G.

DR. WUERDEMANN'S REPLY.

January 30, 1905.

Dr. George M. Gould, Philadelphia, Pa.

My Dear Doctor: Yours of the 28th, together with letter for publication in Ophthalmology, received. Have also received letter from Dr. Burnett. Both will be published.

I must, however, edit your sarcasm. The polemic article

of Dr. Fridenberg and the review of Dr. Melville Black had also been blue-penciled by me to the point where I thought the personalities has been sufficiently eliminated. I am, therefore, returning you your letter with the suggested corrections, and hope you will return same to me at once, so that I can put in the April issue, copy for which is mostly in press.

I beg to inform you that Ophthalmology proposes to submit both sides of any question, without fear or favor, the same as you do with American Medicine.

.. Ophthalmology will always be pleased to receive contributions from you, and we hope for more, especially on disputed points. We would also be pleased to consider any criticisms you might have to offer in regard to our journal.

With kind tegards,

Very truly yours, H. V. Würdemann.

DR. GOULD'S SECOND LETTER.

Dr. H. V. Würdemann, 105 Grand Avenue, Milwaukee, Wisconsin.

My dear Dr. Würdemann: Your letter of January 30th is received, and I must express my astonishment. In my article criticised by Dr. Fridenberg there was not a word that could be suggestive of personality. He uses the long string of rude personal epithets in his criticisms which I have merely quoted, "assurance," " pseudo-science," etc.: I merely repeated these words in order to call attention to the kind of writing with which I am met. I had not been remotely "personal;" in repeating the words in quotation marks you consider me personal! Frankly, I do not understand nor agree. You did "blue pencil" these words of his article; you do delete them in my reply when simply quoted literally. Why? The result is that you allow Dr. Fridenberg to attack me personally and will not allow me merely to quote his words without application to any-one, but solely as instances of personalities. If I should call Dr. Fridenberg's article and author by the terms he uses in speaking of mine and me would vou allow it? And yet I am in the wrong, and Dr. Fridenberg is allowed his epithets without opportunity of my referring to them simply because (according to your letter) he used worse terms which were eliminated! I trust, in the interests of "both sides" which you uphold, you will print my letter as it stands. If you edited out of Dr. Fridenberg's letter the worst of his attack then his animus must have been evident to you. Why, therefore, did you allow those which I have quoted to stand?

And Dr. Black's worst things you have also blue-penciled. Why did you not erase all of his abstract? It does not at epitomise my article, but was plainly "dead bent" on ridicaling it. Yet the article was a serious study of a serious fact—the methods of receiving medical discoveries. And Dr. Black's "abstract" was editorial matter, representing editorial, or objective professional opinion. It is itself another capital example of the method of receiving medical discoveries.

You ask for criticisms of your journal. The foregoing is reply. But what use? You allow others to be personal, "caustic," to a strange extreme, but I may not be so in any degree, nor even so impersonal as to quote for illustration without comment. Will you explain?

Cordially yours, George M. Gould.

DR. WUERDEMANN'S SECOND LETTER.

Dr. Geo. M Gould, Philadelphia, Pa.

Dear Doctor: I have delayed yours of the 2nd until I could consult other members of the Staff. We have decided to limit the pages of Ophthalmology to original articles, abstracts and reviews. This policy will not permit of publication of "correspondence" or news items which are delegated to the weekly and monthly journals.

We would be pleased, however, to receive an original a room you, taking up your side of the argument on Dextro

With regards,
Very truly yours,
H. V. Würdemann,

DR. GOULD'S THIRD LETTER.

Dear Dr. Würdemann:-

I am sorry that I have been at least the indirect cause of the omission of Correspondence and

News Items from Ophthalmology,—as not seldom such pages are the most valuable in a medical journal. The plan, however, does undoubtedly effectually dispose of troublesome writers and awkward editorial predicaments.

You ask me to contribute an original article, but before writing it I feel that I must ask you to give me definite answers to the following questions:—

- 1. If the article is conceived and written in the spirit of your editorial abstract of my paper on The Reception of Medical Discoveries will you accept it?
- 2. Will you accept, if, in speaking of another contributor and his article, I use the following terms?—"Such assurance," "confusion," "cart before the horse," (many times repeated), "queer statement," "wholesale statements," "evident inaccuracy," "absurd," "misstatement," "unsupported assertions," "inaccuracies of observation," "contradictory logic," "hasty conclusion," "dangerously visionary," "fantastic assumption," "pseudoscience," "greater height of absurdity," "squander sight," "grasp at the shadow and lose the substance," "for the sake of a chimera juggle with a vital function," "risk incalculable harm," etc.

Sincerely yours, Geo. M. Gould.

ANSWER TO THE LAST LETTER.

March 2, 1905.

Ophthalmology will publish polemic articles attacking or defending scientific opinions. They must, however, be pertinent to the controversy, and must not attack nor criticise our publication for we are only a medium for the thoughts of others, and are not responsible and do not necessarily agree or disagree with the writers who use our pages as a medium.

We see no objection to the use of the words and phrases you have suggested in your letter of the 23rd ultimo.

Very truly yours, H. V. Würdemann.

A LAST WORD.

March 4, 1905.

Dear Dr. Wurdemann:-

In answer to your kind letter of March 2, I would ask:

- 1. Was Dr. Black's editorial epitome of my article not an instance of the evil you deprecate?
- 2. You evade answer to my question if an article motived in the same spirit, and carried out in the manner, of Dr. Black's resume, will be acceptable to you,
- 3. Why is your publication not to be criticised or attacked when it attacks contributors, and writers?
- 4. You see no objection to the use of the words I quote, and yet when I merely repeated them as instances of wrong methods of controversy, and without comment, you excluded them from my letter, and did not exclude them from Dr. Fridenberg's article, whence I quoted them.

Truly yours, Geo. M. Gould.





H. MEIBOMIUS (1636-1700),
Discoverer of the Meibomian Glands.
(From a Copperplate Engraving by J. Sandrart.)

THE ANNALS

OF

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No. 3.

CORNEAL CYST. WITH THE REPORT OF A CASE.*

By Mortimer Frank, M. D., B. Sc., (Mass Inst. Tech.)

CHICAGO.

Parsons¹ writes: "There is a small group of cases in which cysts have developed in conjunctiva lying on the cornea. There has usually been previous injury or blennorrhœa, and the condition is probably due to the formation of an extensive pseudo-phterygium by the adhesion of the chemosed conjunctiva to the corneal wound or ulcer." In the following case there was no history of wound of the cornea or previous inflammation or trauma.

W. W., male, aged forty-five years, sought advice on account of a tumor of the right eye which had existed for fifteen years. The examination demonstrated the presence of a cyst-like growth situated at the apex of a pterygium, on the nasal side of the right cornea (Fig. 1). A similar process is beginning in the left eye as shown by the presence of numerous pin-point elevations on the apex of a commencing pterygium. The cyst measured 3 mm. in height, 4 mm. in width, by 5 mm. in length, starting at the limbus and lying wholly upon the corneal surface. It was opaque, whitish in color, and firm to the touch. A hypodermic needle passed into the cyst withdrew about two minims of a clear, almost colorless fluid, faintly alkaline in reaction.

The cyst collapsed but the anterior chamber remained full,

^{*}Read before the Chicago Ophthalmological Society, May 9, 1905.

demonstrating no communication between the interior of eye and the cyst. Microscopic examination of the cyst of tents showed cellular debris and a few epithelial cells. The pterygium was torn loose from the cornea with a strabish hook, destroying the anterior cyst-wall at the same time. Forming the posterior surface of the cyst was a firm, the scale of tissue 3x4 mm., which had probably separated from the cornea by pressure necrosis. This was dissected out at the wound in the conjunctiva was drawn together with the sutures and the corneal area corresponding to the cyst cretted. The wound healed promptly.



Microscopic Examination. The specimens were fixed formalin, hardened in alcohol, and imbedded in paraffin, conjunctival, or exposed surface of the pterygium is cove with stratified epithelium, the cells upon the surface be flat with single round nuclei but becoming cubical or cy drical as the basal layer is reached (Fig. 2). It varies thickness, being thicker in the folds and becoming thin as it approaches the cornea. The stroma at the apex of pterygium is dense and firmly fused and contains many blovessels in close proximity to one another. Immediately hind the apex, the stroma is looser and contains many round spindle-shaped cells. The anterior part of the cyst for

by conjunctiva is lined by stratified epithelium of varying thickness, greatly flattened and altered by pressure (Fig. 3). The transition from exposed conjunctival epithelium to that of the cyst-wall is demonstrable in some sections. The posterior portion of the cyst formed by the thin scale of corneal

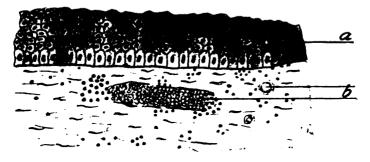


Fig. 2. Cross-section through conjunctival (exposed) surface of pterygium.

a-Epithelium.

b-Blood-vessels.

tissue is lined by corneal epithelium of varying thickness, likewise flattened and altered by pressure (Fig. 4). Bowman's membrane is present in some places and destroyed in others.



Fig. 3. Cross section through anterior portion of cyst. a—Epithelium.
b—Blood-vessel.

Corneal cysts are of two kinds, those lined by a single pavement layer and endothelial in character, and those lined by epithelial cells several layers deep of conjunctival or corneal origin. In most of the reported cases injury or ulceration have preceded the cyst formation and in others, as reported by Treacher Collins² the cyst resulted from detachment and implantation of corneal epithelium in the substantia propria.

We are concerned only about the epithelial type of tumors of which the foregoing is an example. Del Torro,² reported a case of the epithelial type in a man forty years old. The cyst of the cornea had existed for fourteen months and developed from conjunctival epithelium which had over-lapped the cornea. In Reid's⁵ case reported by Bietti there was a corneal cyst at the limbus which extended on to the cornea for some distance. It was lined by flattened epithelium and covered in front by conjunctival epithelium.

In Samelsohn's case a cyst, 3 mm. in diameter, was situated over the prolongation of the external rectus and extended 1 mm. on to the cornea. It was supposed to have resulted from the degeneration of the apex of a ptervgium.

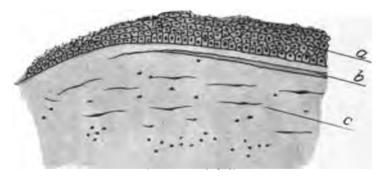


Fig. 4. Cross-section through corneal scale.a—Epithelium.b—Bowman's membrane.

c-Stroma.

In Bietti's own case the cyst measured 3x5 mm. and was situated at the limbus. Three-fifths of the cyst was in the cornea. The condition is supposed to have resulted from a pseudo-pterygium following superficial marginal keratitis.

In the early stages of the cysts described they were all probably superficial. Absorption of the surrounding tissue due to pressure may account for their extension into the substantia propria. In my case this had not yet taken place, although a necrotic piece of corneal tissue formed the base of the cyst.

¹J. Herbert Parsons, The Pathology of the Eye, Vol 1, p. 255. ²Treacher Collins, Oph. Hosp. Rep. XIII, 1890.

³Del Torro, Centralbi, f. Augenkeilk. 1878, p. 65. ⁵Bietti, Klin Monstsbl. f. Augenheilk. XXXVIII, p. 238.

^oSamelsohn, Klin. Monatsbl. f. Augenheilk, 1872, p. 310. ⁷Bietti, loc. cit.

THE TECHNIQUE OF IMPLANTING THIERSCH EPIDERMIS GRAFTS IN THE OPERATION FOR SYMBLEPHARON

Ву F. C. Нотг. М. D..

CHICAGO.

In his excellent work on Ophthalmic Operations, Professor Czermak¹, in speaking of symblepharon, writes: "If we now turn to the operative attempts at relieving this condition we enter upon a very cheerless field, rich in experiments and failures. For a very long time the surgical art has been endeavoring, and up to this time with very little success, to conquer the rebellious forces which irresistibly try to reunite the separated parts." This gloomy view, written in 1893, was at that time well justified. For the schemes so far tried to prevent the lid and eyeball after their separation from reuniting, had yielded very poor results. The transplantation upon the lid surface of skin flaps from the vicinity (cheek or



temple), or of Wolfe flaps, could not give satisfactory results because the ocular wound surface was left to heal by cicatrization, and because the thick skin flaps were too coarse and unsuitable for conjunctiva. And the grafting upon the lid and eyeball of rabbit's conjunctiva or mucous membrane from the mouth, upon which method great hopes had been built, has proven a total failure.

Since 1893, however, conditions have been changed by the substitution of the Thiersch epidermis flaps. They have proven an admirable material for lining the wound surface of lid and eyeball; and the reports of Hotz², Morton³, May⁴, Axenfeld⁵ Lindstroem⁶, Natanson⁷, and Woodruff⁶, show re-

sults which are far superior to those obtained by former methods and justify us to take a brighter view upon the possibility of relieving the very grave and troublesome condition of extensive symblepharon. Like in other plastic operations, the success of the operator depends a great deal upon his perfectly mastering the details of the technique; and it is the object of this paper to show how this method has been gradually developed and to give a full description of its present state.

In 1888, I had used a large Thiersch flap for restoring the conjunctival pocket which after enucleation had shrunken so much that even the smallest glass eve could not be inserted, The good and permanent success of this operation induced me, in 1891, to try a Thiersch graft in a case of symblepharon of the nasal half of the lower lid. After separation of the lid from the eveball a graft was spread over the lid wound and both eves were bandaged. The graft healed in smoothly and the palpebral surface was restored; but the wound on the eveball which had not been covered, produced a thick psuedo-ptervgium which considerably restricted the movements of the eye. In 1892, therefore, this pseudo-ptervgium was dissected out and the wound covered with a graft. In order to prevent a displacement of the graft the eveball was rotated toward the external canthus and fixed in this position for 48 hours by a ligature which was passed through the episcleral tissue at the temporal margin of the cornea and tied around the auricle.

In my second case I put one graft on the palpebral wound and another one on the bulbar wound and fastened the latter graft by fine silk sutures to the margins of the ocular conjunctiva on each side of the cornea and below near the fornix.

My next venture was to use one large graft for lining both wound surfaces, the bulbar portion of the graft again being sutured to the edges of the ocular conjunctiva. Although this plan also was successful, it seemed to me that the loss in depth of the new conjunctival pocket was greater after the definite healing than in the cases in which two separate grafts had been used. I believe we can account for this difference in the final results in this way: If two separate grafts are used, each one unites evenly and firmly with the underlying tissues right down to the newly made fornix. The lower edges of the two grafts uniting in the fornix reach into the angle where the palpebral and bulbar wound surfaces are joined, and gaining there quickly a firm union with the lid on the one

side and the globe on the other side, they successfully resist the tendency of reuniting inherent to all wound surfaces which meet at an acute angle. But if one flap is taken to cover both wounds, there arises the difficulty of securing an intimate contact of the graft with the wound angle where it passes from the lid over to the eyeball. For even if the flap is ever so carefully adjusted at this point while the lid is everted, it is obvious that when the lid is replaced the graft is apt to become wrinkled and to lose its close touch with the wounds along the line where it is reflected from the lid to the ball. It will therefore not fit closely into the angle of the wounds nor will it gain there an immediate and firm adhesion. Under these conditions the wound surfaces at once begin to reunite at the angle and push the loose fold of the graft upwards, thus materially decreasing the depth of the palpebral pocket.

It is therefore very desirable to secure an accurate and firm attachment of the transition fold of the graft with the angle of the two wound surfaces. For this purpose loop sutures have been employed. But sutures secure intimate approximation only at the points of the sutures while in the spaces between the sutures the coaptation is more or less imperfect. Besides as these sutures are carried deeply through vascular tissues there is always the possibility of more or less profuse bleeding from the stitch hole under the grafted flap, whereby the success of the grafting may become entirely problematical.

In 1897 Dr. May inserted a suitable porcelain shell (such are are used for the making of artificial eyes) for retaining the grafts in place and pressing them firmly into the new fornix.¹ This scheme appealed to me as a very happy solution of the problem of fixing the transition fold of the flap accurately into the angle of the wounds; and I adopted it at once, only with the modification that instead of a porcelain shell I employed a plate of lead or tin,² cut from strips which I keep on hand $2\frac{1}{2}$ centimeters wide and $\frac{1}{2}$ millimeter thick, and having a row of holes $\frac{1}{2}$ centimeter apart along the one edge.

(1) If we have to deal with a symblepharon of the lower lid and the lid and globe are thoroughly separated and the cicatricial bands excised a halfmoon-shaped disk is cut from

¹Published in 1899.

²But not tinfoil from bottle caps, as Professor Haab erroneously stated in his recent book on "Surgical Ophthalmology."

the lead strip, the perforated edge making the straight line of the half moon. This disk is trimmed with scissors and rounded off at both ends until it accurately fits into the lid pocket; that is to say, if the plate is inserted between lid and eveball and the lid is replaced, its convex edge must rest firmly upon the angle of the two wounds; its straight edge must be even with the lid border and its rounded ends must reach to the outer and inner canthi. After I am satisfied of the accurate fitting of the plate. I proceed to the cutting of the epidermis flap from the outer surface of the patient's arm. The arm is extended from the shoulder, and while an assistant or nurse is supporting the elbow and forearm. I grasp the arm between the fingers and thumb of my left hand so as to keep that portion of the skin from which the flap is to be shaved evenly stretched. A flat razor is used and its side, which is laid upon the skin, is lubricated either with sterile vaseline or blood serum to make the movement of the blade easy and smooth. If this is done it is not difficult to cut a flap wide and long enough to cover the whole wound and to get it so thin that it contains merely the epidermis and the tops of the papillæ. The cut flap is transported directly from the blade to the wound over which it is spread out while an assistant holds the lid everted. The bulbar portion of the flap is then fastened by a few fine silk sutures to the wound edges of the ocular conjunctiva at the nasal and temporal side. Then the flap is well tucked down into the angle between the eveball and lid and finally spread over the lid wound to the free margin. Now I place the convex edge of the lead plate upon the flap at the junction of lid and eyeball and hold it there securely by moderate pressure, while the assistant allows the everted lid slowly to return to its natural position. Before, however, the lid is fully replaced I convince myself that the edges of the flap are not rolled in at any point; should this be the case they are smoothened with the point of a scalpel. Everything being satisfactory, I still holding the plate in place; insert a needle armed with thin black silk into the hole in the straight edge of the plate which is nearest the center of the lid border and pass it out through the lid, and let the assistant tie the thread. A similar suture is put near the outer and inner canthus. Fastening in this way the lead plate to the lid has several great advantages. The plate is securely held in its position and its convex edge presses the transition fold of the graft firmly into the wound angle, thus rendering a reunion of the palpebral and bulbar wound at that

point impossible; as the plate is soft and pliable enough to adapt itself readily to the curvature of the globe, it presses the flap evenly against the wound surfaces of the globe and lid and secures its perfect and uniform contact with the underlying tissues. As the margin of the graft along the lid border is included in the sutures, any displacement of the flap is impossible; and, finally, the plate immobilizes the lid and eyeball so perfectly that it is not necessary to sew the lids together; and this again has the advantage that, at any time during the healing, the lids can be opened to cleanse the eye, and the lid with the plate can be drawn away from the eyeball to inspect the bulbar portion of the graft; nor is it necessary to keep a bandage on the eye more than two or three days. The plate is not taken out before the end of one week.

(2) In symblepharon of the upper lid the fixation of the graft and the immobilization of the lid requires a lead plate of a different form. In order to immobilize the upper lid it is necessary to check the action of the orbicularis and levator muscles: but it is evident that a plate such as is used for the lower lid, fastened to the upper lid can not prevent the muscles from moving the lid up and down; and even if we should sew the lids together the immobilization would not be complete because the muscles could still move the united lids more or less. I therefore use in these cases a plate which covers the whole eveball and reaches with its upper edges into the upper fornix and with its lower edge into the lower fornix. If the cornea is preserved, a round piece may be cut out of the plate to avoid any mechanical lesion of the cornea. After the plate is properly molded so that when it is inserted the lids can be closed comfortably, the graft is cut, transported to the wound and its bulbar portion is sutured to the wound edges of the ocular conjunctiva. Then the graft is spread over the bulbar wound to the fornix and over the everted lid; now the upper edge of the plate is put on the upper fornix and the plate is made to rest on the eyeball, while the upper lid is allowed slowly to come down upon the plate; and, finally, while the plate is held in this position, the lower lid is drawn down from under the plate until its border slips over the lower edge which then comes to rest upon the lower fornix.8 The lids are now closed and their free borders are united by three strong sutures. Now the immobilization of the upper lid is well secured; for the levator muscle cannot draw it up-

This manipulation is exactly the same we employ in the insertion of a glass eye.

wards because it would have to drag the lower lid with it, and this is prevented from moving up by the lead plate resting on its fornix; and the orbicularis muscle cannot move the upper lid downwards on account of the successful opposition of the plate resting on its fornix.

Like in the lower lid, the ready adaptation of the plate to the surface of the globe favors a uniform approximation of the epidermis flap over the entire wound and to the fornix, and insures its quick and uniform adhesion to the underlying tissues. I have never seen a graft fail to adhere.

The lid sutures usually hold at least three or four days, and by this time the graft is so firmly adherent that the movements of the lid can not disturb it. The plate is worn at least one week, but after the lid sutures are removed, it may be taken out every day for cleansing the eye.

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CONGENITAL PARALYSIS OF THE ABDUCENS OF ONE EYE WITH CONVERGENT SQUINT OF THE OTHER

By V. L. RAIA, M. D.,

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On the median line the left eve squints inwardly about 3 mm. and becomes straight if the other is covered. Behind the screen the right eye strongly converges (about 10 mm.), and remains so even when the cover is removed. If the patient is told to look ahead at a distant object with the left eve, this directs its visual line on the same, while the right eve deviates in, from which position this latter, under the same influence of the will, passes promptly to that of fixation, the former resuming its slight inward deviation. moving an object in front toward the side of the deficient movement, while the left eye stops in the median line, the other one follows it to the extreme left where occasionally, after considerable narrowing of the palpebral fissure, it abruptly deviates in. This squint, which is preceded by a pulling sensation in the eye, can be reproduced at any time if the gaze is directed not only out toward the left, but slightly downward. When this takes place the left eve becomes the fixing one, the lack of abduction being compensated by a turning movement of the head. This strong inward deviation is just what the patient complains of, and must be of such a frequent occurrence during the day that the muscular trouble of the other has completely escaped her notice. There is no diplopia and none could be elicited even with colored glasses.

Considering the mechanism of production of this periodic squint, which manifests itself when the external rectus is called into play, it is easy to conclude that the primary alteration in our case is the paralysis of abduction. The secondary affection in the right eye must have been developed later, and as this by the patient is referred back to her earliest childhood, we may well be justified in calling the muscular paralysis a congenital disturbance. On the other hand the difference of vision, although slight, which we have found between the two eyes, O.S. with 0.50 D. less hypermetropia being lower than 5/6, while that of O.D. little above 5/6, in my opinion is a further proof that the functional disturbance in the left eye is of older date.

In the lateral direction of the gaze, when the action of the paralyzed muscle should come into play, a strong nervous impulse is felt by the right internal rectus. Add to this the efforts at convergence due to the hypermetropia, and the abrupt inward deviation of the right eye may be easily explained. The correction of the refraction in fact has diminished the frequency of the squint, alleviating also the patient of the sensation of strain and of the persistent headache.

Very interesting is the control which the patient is able to exercise in directing one or the other visual line on the object of fixation, not only straight ahead, but also a little to the left side. We have practically an alternating strabismus with this difference from an ordinary one, that a different muscular energy is spent in fixing with the right or left eye, so that by these efforts the patient becomes conscious which eye she is using.

In regard to the etiology, I can say that only a lesion of the nucleus of the sixth nerve can produce an isolated paralysis like ours. But an alteration limited constantly to one nucleus, without propagation to the others, seems very improbable; and I rather believe in an arrest of development or complete absence of the external rectus.

TWO CASES OF SPASMUS NUTANS.

By Mary Buchanan, M. D.,

PHILADELPHIA.

Spasmus nutans is a disease of infancy, occurring generally between the fourth and twelfth months. It is characterized by nodding, lateral or rotary movements of the head, either singly or in combination, accompanied by nystagmus. The head movements are monotonously "regular, smooth and easy," while the nystagmus is very rapid. The latter may coincide with the direction of the head movements, or may not, and may be either lateral, vertical, or rotary, or a combination of these. Only one eye may be affected at a time, or the variety may differ in the two eyes. Attempts at fixation, or holding the head still, only increase the nystagmus, and will even cause it to begin again if it has stopped. Nystagmus is probably present at some time during the course of the disease, although it has not been observed in a few of the cases reported.

The subjects are generally rhachitic, or are convalescent from measles, whooping cough, pneumonia, etc. In about twenty-eight per cent. falls preceded the onset. Dentition was looked upon by the earlier investigators as a cause, but has now been generally discarded.

The tendency toward classing this disease with eclampsia nutans, salaam convulsions of infants, head banging, and other epileptiform and choreic affections, is shown in the nomenclature, different writers having described cases under the names of gyrospasm, rotary-head-spasm, head noddings, and head-jerkings. Later observers object to thus emphasizing one symptom, thereby giving an erroneous impression. For convenience, the old terms, however, continue to be employed. These patients are not impaired mentally, but, on the contrary, are often particularly bright; nor is inherited neurotic tendency found.

Thomson (Scottish Medical and Surgical Journal, July, 1900) calls attention to rickets as a predisposing factor, although the number of cases of spasmus nutans does not bear a constant ratio to the cases of rickets; for example, he has observed that in Vienna and Budapest, rickets is more prevalent

than in Edinburgh, though he saw thirty-five cases of spasmus nutans in the latter city, while Raudnitz, in the Budapest Children's Hospital, could collect only fourteen cases during three years among 52,213 patients. He also remarks the very few cases reported in the United States.

Although Thomson regards rickets as the cause of spasmus nutans, he notes that it is never found associated with laryrigismus stridulus, convulsions, tetany, or facial irritability, and doubts whether rickets bears the same relation to spasmus nutans as to them

Deficient daylight is Thomson's second causal factor, and in support of it he argues that all his cases lived in crow ded, narrow, city streets, in dingy rooms, and contends, also, that most of the cases have their onset in January, when the days are shortest. Raudnitz (Jahrb. f. Kinderheil., 1897, xlv., 145, 146) found the same conditions in the surroundings of his patients, though he goes further, and attributes the condition in general to the prolonged forced position which the eves and head of the child necessarily assumed in gazing at some bright object which was in an awkward situation in relation to its crib. Emily Lewis (Medical News, November 10, 1894.) obtained the same history in several of her cases, attributing the condition to fatigue of the extraocular muscles and d = awing the analogy between it and miner's nystagmus. w hich has been proven to be due to the cramped position and faxity of gaze which they assume at their work.

Hadden (Lancet, London, 1890, i., 1293) believes that the movements are due to the instability of the motor cera tres above the nuclei in the spinal cord and fourth ventricle, presumably the cerebral cortex.

Aldrich (American Journal of the Medical Sciences, 1899, exvii., 158) refers it to cortical exhaustion or to disease or defects in the medullation of the conducting fibres, brollight about by rhachitic or other nutritional disturbances.

Caill (Transactions of American Pediatric Society, 1 599, i., 237) suggested that the muscular spasms were reflex from irritation produced by light, and proved his theory by making the movements cease by bandaging the eyes.

In order to ascertain whether these movements are refex, the eyes should be examined thoroughly in each case. This, unfortunately, has been neglected. Only twenty-two are reported where the eyes were examined, and of these twenty-one are dismissed with the statement that the redia are clear and the eye-grounds normal, while in the one remaining there was an absorbing conus at the temporal side of

the disk, indicating stretching of the coats and lengthening of the eyeball, tending to myopia. These statements are correct as far they go, but they do not go far enough. I believe that the head-nodding and nystagmus are both attempts on the part of the child to obtain binocular vision, and that a careful study of all the ocular conditions, even to the state of the refraction, should be made to ascertain the obstacle that each particular child may have to contend with. This may sound like the refinement of specialism, but in our first case it yielded a very satisfactory explanation.

Consider for a moment what binocular vision means. Think of the gradual development of the eve in the vertebrate series from a mere pigment spot, sensitive to light, into a structure like our own; then, too, of the gradual approximation of the orbits in the skull, so that, instead of each eve standing guard over its own side of the body, and being entirely independent of its fellow, each field of vision overlaps the other more and more until, in man, both eyes can see the same object simultaneously with certain limitations; furthermore, the image of the object is focused on corresponding parts of the two retinæ and carried to the same centre in the brain. This implies stereoscopic vision, for each eve views the object from a slightly different angle, and the two different images are carried to the same cerebral centre and make a more perfect picture, showing the thickness of the object as well as its length and breadth. In short, perspective is dependent on binocular vision. But evolution cannot stop here. Binocular vision is a gain, but it would be at the expense of limiting our field of sight were it not supplemented by the rich endowment of eve and neck muscles. By a co-ordinated movement of these we obtain a wide range for binocular vision. Nor is this all, for knowledge from the same source, but of a different nature, is being constantly brought to the brain by the muscular, the oral, and even the vestibular "senses." All these sensations must be collected and associated before a complete picture is formed and stored up as a memory.

Flechsig's investigations (American Text-book of Physiology, Vol. ii., second edition) show that while the cortical centres governing motion and sensation are developed at birth, the vast association areas are undeveloped. Here the infant must group correlated sensations and associate the reflex movements for himself.

I have dwelt upon this at such length because binocular vision is such an every-day possession with most of us that, like most common things, its delicacy and complexity are not appreciated. Enough has been said to show that binocular vision is a recent acquisition in the evolution of the species, and as the "Ontogeny recapitulates the phylogeny," the infant develops the power correspondingly late.

Claude Worth (Lancet, London, May 11, 1901), in his investigations among healthy children, found the first distinct evidence of binocular vision, which he calls the "fusion faculty," at the age of six or seven months, and that it does not reach its full development normally until the end of the sixth year.

Preyor says associated eye and head movements may be seen as early as the tenth week, but are not perfected until the tenth month.

To have binocular vision this whole mechanism must act harmoniously. The usual form of congenital nystagmus, that rapid oscillation of the eveballs, which may be either horizontal, vertical, or oblique, is due to a defect in some part of the reflex arc. At times it is a fault of the end-organs. as in albinos, where the absence of pigment makes a clear photograph impossible. In others it is the want of power in the controlling cortical cells, as in idiots and the feebleminded. The nystagmus of spasmus nutans differs from these. It is purposive: the horizontal form assumes the convergent type,—that is, the eves seem to approach each other as if they were trying to focus on one object. The congenital, on the other hand, has no such purpose. The centre of the cornea does not act as a pivot, but describes an arc of an ellipse. Other peculiarities of the nystagmus of spasmus nutans are that it may be present in only one eye, and that it may differ in variety in the two eyes. All symptoms point, as Thomson shows, to its being a "co-ordination neurosis."

In the cases which follow we found enough proof to warrant our asserting that the cause of the affection must be assigned to the effect which is made to obtain binocular vision, and that probably if each case could be examined at the outset by an ophthalmologist a similar condition would be found, and much of the obscurity as to the etiology would be cleared away.

Case 1 was presented at the Presbyterian Hospital during Dr. William T. Shoemaker's service, and it is through his courtesy that I am allowed to report it.

Alice B., (colored), aged seven months, was brought to the clinic March, 1901, on account of an attack of acute catarrhal conjunctivitis of both eyes. Condition on admission: eyelids adherent, red and swollen, with photophobia and lacrimation;

convergent lateral nystagmus, more marked in the right eve: pupils small, irides reacting well to light, accommodation. and convergence: head-jerking intermittent, consisting of several nodding movements forward, each succeeding one more marked and flexing the head more. Patient is breast-fed and otherwise healthy. Mother had noticed the nystagmus and head movements only a couple of weeks before the visit. No history of traumatism could be elicited. The patient is an only child, and both parents are healthy. No family history of myopia. The mother has a convergent squint in the left eve, probably due to a dense opacity which followed on thalmia neonatorum, covering the pupillary area of the cornea and making central vision impossible. After the conjunctivitis disappeared a more thorough examination of the eyes was made. and she seemed to see with either eve, but objected to having either eve covered. The eve movements were good in all directions. A weak solution of atropin was instilled, and a satisfactory fundus examination was made. The media were clear: the eve-ground showed no gross changes, but the refraction was myopic—about four diopters, with astigmatism with the rule, axis almost horizontal. We determined this not only with the ophthalmoscope but also with the retinoscope.

By the end of June the nystagmus and head-nodding had ceased, and there was a periodic squint, the left eye turning in about fifteen degrees. The following December, after an attack of bronchitis, the nystagmus returned for some weeks. It again disappeared, but returned about the middle of April. 1902, and was still present June, 1902, though the head-noddings had not recurred. The squint in the left eve had become permanent, and the nystagmus was very rapid and still of the lateral convergent variety. The child was then twenty-three months old and of late her head has perspired at night. She was late walking. The fontanelle was not entirely closed the forehead is prominent. There are no other signs of rickets. The head is long, the limbs straight, and there are no epiphyseal enlargements, and no rosary. The eve-grounds then showed some slight pigment disturbance and a small, absorbing conus to the temporal side of the disk. The myopia has increased to 10 D, and the axes are about 45 degrees in the right and 135 degrees in the left eve.

Case 2, occurred in the private practices of Dr. Harvey Shoemaker and Dr. W. T. Shoemaker, and I am indebted to both these gentlemen for the opportunity of seeing it and adding it to the other.

Male, (white), aged six months. Hygienic surroundings; general health good: the voungest and healthiest of six children, five of whom are living and well, while the other died of a contagious disease in infancy. The patient fell from a crib in December last, striking his head violently, and a few days later the mother noticed a violent lateral head movement associated with lateral nystagmus, much more marked in the left eye. The child seemed frightened. If his attention was directed to an object toward the right he would slowly rotate his head in the opposite direction until the object was below and to the right, when he would give a number of jerky, nodding movements toward it. Turning of the eyes was usually to the right, though similar manœuvres were gone through when the object was placed to the left. The child sees with either eye. The irides respond promptly to light, accommodation, and convergence, and the binocular movements are good in all directions. There is no squint or paralysis present. Examination of the eve-grounds revealed low myopia, with no fundus changes. The father of the child is myopic 4 D.

At the time of writing, five months after the onset, the lateral head movements have ceased. The nystagmus is only present in the left eye, and, although the child still preserves his curious, eccentric fixation, the head-jerking is much slower and less marked

In the first case the age and sex fulfill Thomson's outline of predisposing causes, but there was no evidence of rickets at the time of onset, and deficient daylight can be excluded. The child lives in a pleasant street in West Philadelphia, and the living room is well lighted. There is nothing squalid in its surroundings. The ocular conditions present must alone offer the explanation.

This patient is myopic 0 D. This, in common language, means that the greatest distance at which it can see clearly is ten inches from the eye. From objects beyond this the rays of light are focused in front of the retina and diverge again, giving an enlarged, blurred image. The astigmatism makes it still more indistinct, and probably the two images are not focused on corresponding parts of the two retinæ, so that there is not the same stimulus in looking at distant objects that the normal or far-sighted child possesses. Then, again, this baby is still more handicapped. Owing to the leucoma on the mother's left eye, which she acquired almost at birth, she has never had binocular vision, and consequently the child has less "fusion faculty," by inheritance. The nystagmus, convergent squint, and the head nodding are the evidences of

the struggle to obtain binocular vision in spite of the myopia and the poor fusion faculty.

The first recurrence, in December, is interesting, because it coincides with Thomson's statement that all relapses occur in the winter months. In this case it was probably the lowered resistance following the bronchitis, and not deficient sunlight, that caused the return. The latter cannot be assigned as the cause for the last attack, as April was a particularly bright, warm, and sunny month. The real cause is to be sought in the changed eye conditions. The greatest distance at which objects are distinct now is four inches, all beyond looking blurred. Besides this, the astigmatism has changed. and instead of objects being drawn out vertically, as at first, they are now twisted out of shape; the axis having shifted forty-five degrees, the elongation would be at right angles to this. Even in adults this change in the axis would cause endless trouble: so it is no wonder this baby's ideas become confused, and incoordination results.

A curious feature of the case is the high myopia in a baby of twenty-two months. Infants are born with short or farsighted eyes of about +5 D., and do not become emmetropic until about five or six years of age.

In the second case we must exclude deficient daylight, rhachitis, and the female sex, the age alone corresponding to the predisposing causes before given.

Thomson says he had never known a case in a well-to-de family; but this is an exception. The patient's home is all that could be desired, hygienically. This child also had myopia. with its blurred images, to contend against when it had the fall. Thomson dismisses a fall by saying "it means, of course, a fright." It may mean more. Recent investigations show that in concussion of the brain the strain comes on the iter and the fourth ventricle on account of the force with which the cerebro-spinal fluid is driven suddenly through the narrow iter and into the fourth ventricle. There has also been noted a subarachnoid edema. The situation of the nuclei of the extra-ocular muscles makes it possible that they should be disturbed by a severe blow on the head. This occurring while the infant's association fibres are developing may cause confusion, and the resulting nystagmus and peculiar head movements are his efforts at re-establishment of all the paths necessary to make both eves act in harmony.

The peculiar position taken to fix an object would suggest a loss of power in the depressors of the eyeballs. His assum-

ing this position, either to the right or left, precludes the possibility of only one muscle being involved.

In several of Emily Lewis' cases, where a very full account of the eye movements is given, there is a distinct limitation in one or more directions, and in these the head-nodding corresponds with the attitude of an adult in similar paralysis.

The treatment in our second case consisted in removal to the country, a wise procedure, as Dr. Thomson asserts he has never known of a case of spasmus nutans in the country.

The pathology is not known. Only two cases have come to autopsy, and no lesion was found.

The treatment should be tonic and hygienic. It does not respond to the ordinary remedies for rickets, and the explosion of the epileptiform theories renders the administration of bromides unnecessary. If it be due to refractive error it should be corrected as soon as possible; but no one, in this country, at least, has the temerity to prescribe glasses for infants.

As the prognosis is invariably favorable, the parents' fears can be set at rest, and complete recovery assured.

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PTOSIS AND THE OPERATION OF MOTAIS.*

By HENRY DICKSON BRUNS, M. D.,

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Ptosis (falling of the upper lid) is congenital or acquired. In either case the patient instinctively makes use of the frontalis to raise the lid, at the same time throwing the head back to increase the effect, getting thus the oft-described, characteristic appearance. Acquired ptosis may be due to a lesion of that branch of the motor oculi supplying the levator palpebrae alone, or the whole nerve may be affected, in which case one or more other muscles of the eve (straight internal, superior and inferior, the inferior oblique and the ciliary muscle and sphincter of the iris) are also paralyzed. If an acquired ptosis be recent it is often amenable to treatment, for it is usually of syphi-· litic origin; by far the most fertile source of paralysis of the ocular nerves, including the optic, in my experience. Rheumatism and exposure of the side of the face to cold drafts of air are also given in the text-books as causes. I have seen a few cases which could be reasonably set down in the first category. but none that I felt sure could be assigned to the second. Not a few are traumatic.

Fuchs speaks of a variety of ptosis which develops without known causes in middle-aged women. It is always bilateral and develops so slowly that vision is not interfered with until after many years. It is not a paralysis, he says, but a primary atrophy of the muscle itself which is present. It is probable that my fifth case is one of this sort.

Of 21,139 cases seen and tabulated at the Eye, Ear, Nose and Throat Hospital, of New Orleans, during the past eleven years, only twenty were cases of uncomplicated ptosis (.0009+ per cent.), including all of whatever etiology—three were traumatic. Nine were white, eleven of negro blood, 55 per cent.; the normal attendance of persons of color at my clinic is about 40 per cent. This decided preponderance of that race, even among so small a number of cases, speaks emphatically

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in favor of a syphilitic origin; especially as the preponderance is kept up in those diseases we know to be often syphilitic: the iris, the optic nerve and the paralyses of the other orbital Fifteen were males, five females. The voungest was a congenital case in a child of seven; the oldest was 64 vears of age. The average age of all the cases was 31 years. which bespeaks liability at no particular time in life. Two were treated successfully. One recovered in one month on large doses of potassium iodid and the use of Faradic electricity; the other was discharged cured after 170 days of treatment with large doses of potassium iodid and inunction with Arlt's salve. In both hospital and private practice I have long since come to prefer the use of mercury by inunction, in the form of Arlt's salve, a formula too long fallen into undeserved neglect. It is composed of an ounce of the officinal mercurial ointment well rubbed up with a drachm of the extract of belladonna. If there be pain in the eve, or if it be necessary to assure ourselves that the patient is really getting the inunction prescribed, an important point in the forehead and a bandage applied. Otherwise it may be rubbed in at any of the usual points. It is needless to say that in a hospital where 40 per cent, of the patients are of negro blood, large quantities of the remedy are used, still we are untroubled by the disgusting accident of salivation; yet this distressing state is often brought about by vigorous inunction with mercurial salve without the addition of the belladonna. The potassium iodid is always given pure in water and taken highly diluted. In the great majority of instances it is better borne this way than when mixed with excipients. No fixed dose is given, but the amount is gradually increased until the limit of toleration is reached. It is then discontinued for two or three weeks. to be resumed again at the end of that time. I am satisfied that unless the patient can take the iodid in large doses no brilliant results may be expected from its exhibition.

In a recent paper, De Wecker, out of the wealth of his experience, recommends that the drugs be used alternately in courses of two weeks, the patient making use of the inunctions while resting from the iodid and taking the iodid while resting from the inunctions. I have often followed this practice and believe it to be the best plan of administration. The Turkish, or, where this cannot be had, the hot bath and sweat, the hypodermic use of pilocarpin and the free drinking of water, if the patient's general health and strength permit, are excellent adjuvants. It is needless to say that water will be more regularly and freely taken if any one of the ex-

cellent mineral waters now generally available be prescribed. This therapeusis, of course, applies equally well to the treatment of paralysis of any of the orbital muscles, or, indeed, of any of the syphilitic diseases of the eye. In rheumatic cases we would certainly try the effect of large doses of the salicylates.

Unfortunately, the class who seek hospitals for relief usually apply at so late a day that no thought of therapeutic rescue can be entertained. In these cases of long standing acquired ptosis, as well as in the congenital cases, surgery alone holds out a hope of relief. Congenital ptosis depends upon absence or ill development of the levator p. superioris, or in some instances of the center presiding over the nerve branch supplying the muscle.

The operation proposed by Von Graefe consists of excising a lanceolate portion of the skin and orbicularis of the affected lid, but the effect and relief produced are but slight. The well known operation of Panas, of late the one most employed. in which a tongue, formed from the skin of the lid, is sewed under another undermined portion of skin between the upper end of the tongue and the upper margin of the evebrow, gives. relief, but is objectionable for more than one reason. In the first place, uncovering of the pupil is only to be effected by the same hyper-elevation of the brow, by action of the occipitofrontalis, that has already disfigured the patient. It is but an awkward substitution of the physiological action of one muscle for another. In the second place, the grafting of one portion of skin still covered with its epithelium beneath the raw surface of another is unsurgical and occasionally leads to unpleasant results. All operations which by means of buried sutures or by shortening the tarso-orbital fascia connect the tarsus with the frontalis, accomplish their purpose in the same way. While they may be free from the objection of passing an epithelium-covered flap beneath the skin, they attain this only at the expense of leaving silver wire (Mules) or sutures of other material buried in the wound. (Wilder, Annals of Ophthalmology, Vol. VIII, No. 1, January, 1898).

The operations of Eversbusch and Hugo Wolff for advancement of the levator are much more physiological, but it is evident that it would be useless to advance the completely paralyzed muscle of a long-standing acquired, or the ill-developed or uninnervated one of a congenital ptosis. Certainly it would be embarrassing to attempt such procedure only to find that the muscle was entirely absent! Nevertheless, I do not doubt that under such circumstances these operations may

have been of benefit, not by accomplishing the purpose originally intended, but by shortening the tarso-orbital fascia and so giving to the frontalis better control of the lid.

Such an advancement should, however, be the operation preferred in recent traumatic ptosis, where we had reason to believe that the muscle or its tendon had been cut or torn from its attachment (Charles A. Oliver)—Resection and advancement of the levator p. muscle in traumatic ptosis. (University Medical Magazine, October, 1897.)

The unphysiological nature of these procedures and the obiections and the difficulties often in the way of obtaining a fully satisfactory result, had long given me cause for reflection. When, therefore, in 1899, I first read in the Recucil d'Ophtalmologie a paper by Motais describing his operation, its boldness of conception, its physiological nature and beautiful delicacy of technique at once appealed strongly and I determined to try it at the first opportunity. The essential feature of this method consists in the grafting of a slip from the tendon of the superior rectus into the lid between the skin and the tar-I understand that some surgeons have made certain modifications in the manner of accomplishing this and have permitted the modified operation to be called by their name. This seems to me entirely reprehensible, and I agree with a confrere of Motais, who has well said: "Be the procedure what it may, the moment it is a question of grafting a slip from the superior rectus into the paralyzed lid the operation is that of Motais." The plan of the operation is very simple. The usual aseptic precautions having been taken, the eye is well soaked with four per cent, cocain and 1 to 1000 adrenalin, then washed with 10 per cent, argyrol and lastly with normal salt solution. A short distance above the upper margin of the cornea, over the insertion of the superior rectus (7.7 mm., Fuchs), an incision entirely through the conjunctiva is extended upward as far as possible, an assistant holding the lid back and away from the ball with a retractor or his finger: the lid is then everted and the incision continued through the cul-de-sac to the very margin of the tarsus. The conjunctiva is dissected up at each side of the incision and then well retracted so as to expose the tendon of the superior rectus thoroughly. A strabismus hook is passed beneath the tendon, a snip of the scissors on its end, through the capsule of Tenon, allowing it to pass freely from side to side until the tendon lies upon its shank. It is then pulled forward, to the insertion upon the sclera, and backward, toward the equator of the ball, so as to rip up the tendon as completely as possible. A

fine, but strong silk ligature, armed at each end with a small curved needle, is now passed through the tendon held on the strabismus hook, from without toward the sclera and then out again, in such a manner as to embrace the middle third of the tendon as close to its insertion as may be. The ligature is immediately firmly tied down. With fine scissors the bit encircled by the ligature is now dissected out of the insertion of the tendon and the incisions prolonged upward until a narrow slip, or tongue, comprising about the middle third of the tendon in width, and as long as may be without cutting into the belly of the muscle, is isolated. This is held at its free end by the double-needled ligature and unless the hold be firm and not likely to slip, the success of the whole operation is imperiled. If there be any risk of this, the tip of the slip had better be doubled back upon itself a short distance and the ligature tied tightly around the double portion once more. The lid being once again everted by the surgeon, the tip of his left forefinger being upon the skin overlying the tarsus. with a blunt pointed scissors a dissection is freely made between skin and tarsus, beginning at the point where the original incision through the conjunctiva met the superior margin of the tarsus and continuing down to the free edge of the lid at its central point. With the lid still held everted on the surgeon's finger, one of the needles carrying the ligature made fast to the tendon slip is now passed between the tarsus and the skin, and is made to emerge through the skin of the lid at about 1-16 of an inch from its free margin; the second needle is passed in the same way and emerges through the skin at the same distance from the free lid-edge as the first. but about 1-8 inch away—nearer the outer or inner canthus. as the case may be. By now drawing equally on the two threads, with little settling jerks and pulls, the tendinous slip is made to leave the plane of the levator and pass between the tarsus and the skin until its tip lies under the skin just above and near the center of the free lid-edge. The slip is then made fast by tying the two threads over a very small roll of aseptic gauze. The end of the gauze and the eyelashes had better be cut close to the lid-edge to prevent by any chance their rubbing against the exposed cornea. For, if the operation has been properly performed, the lid is now much puckered and drawn up at its central portion; as would be a drop curtain with a drawing string run through the middle of its width. The pupil is disclosed and the patient hardly able to cover the cornea by his own effort. For, in this, as in all operations on the lids, the immediate effect must be greatly exaggerated—almost a caricature—if we wish the final result to be efficient and satisfactory. The lid being now well drawn away from the eveball (not everted), the conjunctival wound is closed by three or four points of suture equally distributed between the corneal margin and the upper margin of the tarsus. This last suture passing through the loose conjunctiva of the cul-de-sac should be applied with especial care and should take a rather deep, wide hold in the membrane on each side of the wound; indeed, two sutures should be applied if good approximation cannot be had with one, for one of the accidents described by foreign operators is prolapse of the fornix conjunctivæ. (See Oliver's case of traumatic ptosis. loc. cit.) Care must be taken not to involve the grafted tendonslip in these conjunctival stitches; at the same time it must be neatly covered over. Finally argyrol (10 per cent.) is abundantly instilled, the lid drawn down and covered with a disc of sterile gauze soaked in the same solution and all held in place by absorbent cotton packing and an elastic flannel bandage. This it is my present custom to remove on the next day, when the eye is thoroughly cleansed with a borax-boracic wash and the argyrol dressing again applied. After two or three days, if the patient be of an age and temperament to be trusted not to rub or otherwise interfere with his eye, the dressing is discontinued except at night, or a cataract cage may be substituted, and the argyol solution is used every hour. On the fifth or seventh day the ligature is clipped, and if this is carefully done at one point it may be drawn away entire, including the knot.

I have done this operation five times since 1899, always in my hospital service, and so far as I know these are the first which have been done on this side of the Atlantic; at least I have met with no published cases. In my first case, a negro man of about thirty-five, with acquired ptosis on one side, I tied the ligature on the inside—conjunctival surface—of the lid, and kept the eye bandaged several days; following the original directions of Motais. To my chagrin I found on removing the dressing a deep ulcer near the center of the cornea. It was before the days of argyrol and when the ulcer was healed, at the end of about a month, a dense central leucoma remained and the eye was quite useless, although the lid was very well raised. I proposed an iridectomy, but the patient, having tasted the quality of my surgery, was not anxious for more, and disappeared from the clinic.

My second case was a middle-aged negro woman, with one sided acquired ptosis also. You may be sure that this time

I tied the ligature on the skin surface of the lid; a practice, as I see from a later publication, Motais had soon been driven to also. Healing was uneventful, but I had not drawn down the end of the slip close enough to the free edge of the lid, had not sufficiently exaggerated the immediate result, and not more than one-sixth of the normal pupil was uncovered. The paralysis was of long standing, and there was much redundant, puckered skin in the upper lid. I believed the result of the operation could have been made perfect, by the excision of a properly proportioned leaf-shaped bit of skin between the upper edge of the tarsus and the brow, and proposed this to the patient; but, just the opposite of Byron's lady, she consented promptly enough, and then after postponing the operation on one excuse or another for five months, finally "ne'er consented." but took herself off.

The third case was a comparatively young negro man with acquired ptosis, and the operator having profited by his former experiences, the operation seemed to be entirely successful, but as he ran away before the end of the second week, the case cannot be justly recorded, either as a success or a failure.

Case No. 4 is that of G. S., a quadroon child of eight years, with congenital ptosis of the right lid. Her appearance and general health are good. Vision R. E. = $^{20}/_{40}$. L. E. = $^{20}/_{20}$, the lid of the right eye being held up with the finger. On December 15, 1904, she was operated on under chloroform, with the immediate result of lifting the lid three-fourths as much as its fellow.

Healing was uneventful; the dressing was discontinued after twenty-four hours and argyol instilled every hour. The ligature was removed about the sixth day. The accompanying photograph showing the result was taken about the 90th day after the operation. It will be seen that the upper third of the pupil is still covered, but as the effect has gradually increased, as redundant folds of skin in the lid have slowly disappeared, and as the mother informs me that the eye is not quite closed in sleep, though the cornea is well rolled up and covered, there is no question of increasing the effect by the excision of any skin from the lid.

The child sees well, looking straight forward, up, or down as in reading. An interesting point in this case is that the vision of the R. E. upon admission was recorded as $^{20}/_{40}$; on January 3, it is recorded as : while on March the 10th, when she complained she did not see so well, it was found to be R. E. = $^{20}/_{70}$ and L. E. = $^{20}/_{20}$ and examination with the ophthalmometer showed R. E.² ax 90°, L. E.



DR. BRUN'S CASES.

Upper is case No. 4. R. E. shows Motais operation for congenital ptosis. Photo after 90 days. Lower is case No. 5. R. E. shows Motais operation for acquired ptosis, 14 days after operation. L. E. shows condition before operation.

150 ax. 90°. After repeated instillations of atropin (1%) V. R. E., is now with +3s = -2c ax. $90^{\circ} = \frac{20}{30}$.

My last case, No. 5, is I. G., a light mulatto woman, aged 62. Her general health and appearance are good for her age. Vision R. = $\frac{20}{30}$; L. = $\frac{20}{20}$, the lids being held up. The affliction came on gradually fourteen years ago. The paralysis is so complete that to obtain even the little useful vision she has she is obliged to exert the frontalis to the utmost, and to carry her head far tilted back. On March 9th, 1905, under cocain and adrenalin anesthesia, she was operated upon with the infliction of but little pain. On the day following the operation the dressings were renewed. On March 11th dressings were altogether discarded, and argyol instilled every half hour. On the 8th day the ligature was removed and the coniunctival sutures came away. The photograph, taken a day or two later, shows well the complete uncovering of the pupil of the right eve, and the former condition, illustrated by the left eve as vet unoperated upon. It is seen that there are redundant folds in the lid, but my experience with both Case 2 and Case 4 shows that these decrease in time, while the habitual position and the appearance of the lid improve. The forehead is still wrinkled by the action of the frontalis, as one might expect after 14 years of incessant contraction, but this is no longer necessary, for the lid is just as well elevated when the brow is held down as forcibly as possible with the thumb. Indeed it is interesting to observe that relaxation is already beginning. Though only ten days have passed since the operation, the right evebrow is not as raised as the left, and the associated elevation of the right corner of the mouth, with accompanying wrinkling of the whole side of the face is wanting. It is evident that looking straight forward the patient sees perfectly well: looking down she can read, write or sew. and the superior rectus being relaxed, the lid follows naturally the movement of the ball; on looking up, on the other hand, the muscle being most contracted the lid is forcibly raised and is carried well out of the path of the line of sight. Herein this operation surpasses any other that has been proposed; herein it is excellent where they are deficient, for in all of them the lid lags behind when the eve is directed upward, in spite of all the frontalis can do. Indeed a complicating paralysis of the superior rectus is the only contraindication I know to the operation of Motais. When this is present we must fall back upon the old Panas method, upon advancement of the levator, or upon shortening of the tarso-orbital fascia.

A CASE OF KERATITIS NODOSA.

BY OSCAR WILKINSON, A. M., M. D.,

WASHINGTON, D. C.

Capt. P., U. S. A., aet. 70, consulted me on Nov. 17, 1904, in regard to a gradual decrease of vision in both eyes, of several years duration, but which has been much more rapid for the past four months, during which time his general health had been very poor. I obtained from him the following history:

He had always been a moderate drinker, at times drinking to excess. This was especially true of the past four years. He made a habit of drinking two to four ounces of whiskey daily. His health had always been good until recently. He was now suffering from indigestion and insomnia. His kidneys did not bother him, and he knew of no other physical defect. (I learned from his family physician that he had been a hard drinker for several years, and that he had been discharged from the army on account of same; that he had been placed in an asylum for some time and had taken various whiskey cures without any results except temporary abstinence).

On examination there was to be seen a whitish opacity of the centers of both corneas of about the size of a moderately dilated pupil. The centers of both these opacities were more or less discolored, having an amber color. The spots of discoloration seemed to be deposits or flakes of some substance of a higher color than the milky white opacity that gradually shaded off toward the periphery of the cornea, but which did not reach the periphery except in the lower and outer portion of the cornea of the left eve, and this was not visible except with a highly magnifying lens. The opacity of the right eye was slightly less than that of the left, being the one last affected. The pupils, though slightly sluggish, reacted both to light and accommodation. The surface of the cornea of either eye was slightly elevated, and the ophthalmometer showed them to be very irregular. The unaided eye could detect that the elevated portion of the cornea was not so smooth as the other part of it. The affected areas were not so sensitive to the

touch as the periphery. The pupils were of normal size, and the lenses were clear.

There were some atrophic changes in the chorioid, but these were not marked, especially in a subject of his age with 3 or 4 D. of myopia associated with a history of hard drinking for a number of years.

The temporal halves of each nerve were paler than normal and the retinal arteries were small. The peripheral portion of the fundi were not accurately made out on account of the corneal opacities.

R. E., vision with -3 D. 1.50 cv. ax. $180^{\circ} = 6-12$.

L. E.=fingers counted at 3 m. with-4 D.

The urine contained neither albumen nor sugar. A microscopical examination was not made.

An operation being refused there was no study made of the opaque tissue. He died about two months after I first saw him, as I understand, from alcoholic poisoning.

The excuse that I offer for reporting this case is that keratitis nodosa is vet a rare disease, there being only about a dozen cases reported. This disease was first described by Groenouw (Archiv für Augenheilkunde, Vol. xxi, p. 281) in 1890, under this same title. Under the name of "Keratite Goutteuse." in 1891, in the France Medicale, Chevellareau described a case. In February of 1891, Krukow showed a case before the monthly Ophthalmic Society of Moscow. In 1898, Groenouw described a second case in Graefe's Archiv für Ophthalmologie. Fuchs, in a publication entitled "Uber knötchenförmige Hornhauttrübung," describes eight cases that had occurred in his clinic during the past thirteen years. Dr. G. Manzutto described a case in the Annali di Oculistica. Vol. xxxiii. Book 1-2. 1905. (Translated in the March and April number of the Jour. of Eye, Ear and Throat Diseases, Baltimore, 1905) in which he reviews the literature on the subject. He has two cases now under observation which he has not yet reported.

The etiology of this disease is not known. There is usually no history of any inflammation of the eye except a slight conjunctivitis, which condition was absent in my case, there being no previous inflammation. Fuchs says that the condition is usually preceded by a slight inflammation. The special diagnostic feature of this disease is the central opacity of the cornea of each eye, coming on gradually, without a previous history of any serious inflammatory trouble, accompanied with a gradual loss of sight which is never complete.

This opacity is limited to the central area of the cornea, and is usually slightly elevated. The periphery of the cornea is

usually perfectly clear. The opacities are in the superficial layers of the cornea, and, in my case this feature was so very apparent that I was lead to advise an operation on the worse eye. Age does not seem to be a necessary element in its production, as Manzutto has seen it in one of his unreported cases in a girl of only sixteen. The general condition and the progress of the above case, i. e., becoming much worse as his health failed, would justify the conclusion that in his case, it was due to a degeneration from old age and alcoholism, but this would fail to explain its presence in the young. It would be interesting to note, in future cases, if a general failing of health is not associated with this condition.

1404 L. Street, N. W.

ABLEPHARIA PARTIALIS OF UPPER EYELIDS.

By L. Webster Fox. A. M., M. D.,

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Congenital deformities of the eve and its appendages are always of absorbing interest on account of their great rarity. and it is for this reason that I beg to present the report of a case, hoping thereby to stimulate further contributions to this division of ophthalmic literature which I find to be very scant. The patient was a male child five months old*. Examination revealed an entire absence of both evebrows, although the orbital ridges were fully formed. The skin was continuous from the forehead over the ridges and in place of the normal evelids it was prolonged into two pointed flaps (one over each eve), the apices of which were adherent to the cornea and fused with the cornea and conjunctiva; a condition not unlike symblepharon. The condition was best shown by the child looking downward. Upon looking upward, the skin fold was wrinkled as the normal lid would be. In one lid a vestige of cartilage could be detected by palpation. Presumably there was no lacrimal gland, as crying produced no enlargement of these skin folds as observed in some cases. Certain it is there were no lacrimal canals, as the eveballs were in a condition of xerosis for want of secretion. The corneas presented the appearance of maculas, such as follow ophthalmia neonatorum, but careful examination showed the true condition. In one eve there was a partial area of clear cornea near the lower border. The child seemed to have perception of light.

The family history in this case was negative. The father was 27 years of age and the mother 25 years of age; both living and well. There were no miscarriages. The patient was the second child. The maternal grandmother had had an eye removed two months previous to the birth of the child. At birth the eyes of the infant were affected with some inflammatory condition, the nature of which it was difficult to determine. This subsided within a few days, after which the

^{*}Referred to me by Dr. G. H. Woods, Pine Grove Mills, Pennsylvania.

present condition was observed by the mother. In addition to this ocular deformity there is phimosis and a constricting deformity of the ventral surface of the penis. Otherwise the child has enjoyed the best of health.



CRYPTOPHTHALMOS.

Photographed by Dr. George E. Pfahler of the Medico-Chirurgical Hospital. Drawn in water color by Miss Margaretta Washington, and in half-tone by J. G. Ousey.

In a careful search of the literature upon this subject, I am struck with the great rarity of this condition. Difference in nomenclature, no doubt, has to do largely with concealing many of these congenital conditions, but even where the classification has been correct I have been able to find but few, the descriptions of which approach that I have just given.

Most of the cases are attended by a coloboma of either lid. The case described by W. Goldzieher (Centralb. f. prakt. Aug. 1903), is worthy of special remark. When seen by this observer the patient was 10 years of age. The skin passed uninterruptedly from the forehead to the cheek without any indication of evebrows. In his description, he says, a round mass about the size of a cherry, evidently representing a rudimentary eveball, could be felt beneath the skin, but it could not be ascertained whether the eyes were capable of any sensation of sight, although when a strong ray was caused to fall on the bridge of skin some twitching was observed. wards the outer part of the lower margin of the orbit (Goldzieher's case) there existed beneath the skin on both sides a soft mass (perhaps a cyst or lipoma) not continuous with the rudimentary eveball. There was a smooth tuft of hair reaching on either side from the outer angle of the orbit to the teniporal region where it becomes continuous with the hair of the head. In my case there was no hair in connection with the deformity. In both cases the skull was normal. In Goldzieher's case, when the child cried, the bridge of skin bulged forward until tears ran from the nose, when it resumed its natural aspect. The lacrimal glands were thereby assumed to be present. He also surmises that the lacrimal sac was present. I mention this case and give its description because it is the only case I am able to find that bears any resemblance to the one I have described and also to enable me to refer to Goldzieher's theory of the manner in which these deformities are produced.

Goldzieher thinks that intra-uterine inflammation must be at the root of the changes in the eveball, since no arrest of development could account for cicatricial tissue and the various adhesions formed. In human beings, it should be recalled, the formation of the lids commences in the second month. In the third month, the cornea is already covered by the lid processes, the adjacent free margins of which become adherent. an adhesion that continues until the seventh month. At the third month, the formation of a conjunctival sac has already taken place, but the eyelashes, the tarsus, and the Meibomian glands have only commenced to differentiate and their formation is complete only when the lids cease to adhere. He presumes that at the time the conjunctival tract is forming an ulcerative process destroys the superficial tissues of the eveball whereby a considerable loss of substance ensues, which leads to adhesions of the raw surfaces and of the skin covering them. In consequence of these adhesions, the formation of the conjunctival tract must cease. Inasmuch as the cornea has come to grief, the organs of the lid fail to develop, a fact demonstrated by all cases of cryptophthalmos that have been investigated. Tarsus, Meibomian glands, and cilia failing, the globe is covered by a flap of skin and not by the lids.

After a careful study of my own case, I am convinced that this explanation of Goldzieher is the most logical, particularly since the appearance of the eyes would seem to indicate some inflammatory condition at some remote period.

THE PROOF OF THE EXISTENCE OF AMBLYOPIA EX ANOPSIA IN STRABISMUS.*

By Walter B. Johnson, M. D.,

PATERSON, N. I.

It has been the result of unusual experiences, which has led up to the circumstances which permit the offering of what appears to be positive proof of the existence of amblyopia ex anopsia, which is the impairment of vision occurring in consequence of the disuse of an eve which has been excluded from the visual act for a considerable period of time, by absence of binocular fixation. In convergent strabismus which is the symptom resulting from this condition, there is, if the squint is not of the alternating variety, invariably a monocular diminution of vision which is more or less marked. Hypermetropia is, it is believed, the etiological factor in the production of this condition. It has been claimed that almost invariably in the new-born hypermetropia exists as a normal condition. It is certain in any event that it occurs with great frequency. In hypermetropic eyes, even though the vision is equally affected and the refractive error the same, in order that the vision of the eyes may be most acute, extraordinary tension of the muscles of accommodation is necessary, resulting in convergence of the visual lines and consequent confusion of images. This excessive convergence constantly tends towards double vision, and the constant conflict which increasingly exists must eventually result in inability to see distinctly, or squint, with subsequent suppression of the visual image, and finally amblyopia. If the hypermetropia is more excessive in one eve than in the other, as it must frequently be, and the vision of one eye is consequently less acute, confusion of the vision would more promptly occur. and be more promptly followed by the psychical effort to rid the cerebral centres of the annoyance. It is probable that in most of the hypermetropic eyes in which squint occurs, and in which amblyopia subsequently develops, there has been a primary difference in the vision and refraction.

^{*}President's address, one hundred and thirty-ninth annual meeting of the Medical Society of New Jersey, June 20, 1905.

In the greater number of individuals suffering from hypermetropia, it is admitted that neither squint nor amblyopia occur; they are influenced by the instinctive abhorrence to binocular double vision. The necessity of seeing an object singly with both eyes together is natural and important to comfort, and consequently the direction of the visual lines is forceably determined and maintained until such time as the refraction undergoes a change or the consequent eye-strain causes unbearable symptoms which necessitate the relief of the condition by appropriate treatment, the application of glasses, or by operation.

It has been claimed, and is still believed by some authorities, that the amblyopia of strabismus is congenital, and exists as a primary condition; that it is probably caused by some change in the eye itself or in the nerve centres, affecting the vision more or less and producing convergence in consequence of confusion of images.

The loss of parallelism of the ocular excursion (squint) does not occur in a great percentage of the eyes of children who are congenitally affected with loss of vision, and who present discoverable ocular lesion or who may possibly have lesions in the cerebral sight centres. It is a common experience of the ophthalmologist to discover monocular loss of vision, probably from these causes, in adults who have never known the condition to exist, and who do not and never have squinted.

The loss of muscular balance occurring either in the congenitally blind, or in the eyes lost by injury, disease, or opacities of the media, most frequently takes the form of a divergent strabismus and not convergent. This is probably due to the fact that such eyes do not have the constant call upon the accommodative muscles to stimulate convergence; as binocular double vision is not present, and no effort is necessary to overcome it, the eye would more naturally swing out as it sometimes does, when the eyes are at perfect rest.

In convergent squint after an operation, if an amblyopic eye finally diverges, it is due to a similar condition, as that which exists when an eye is congenitally blind from unknown causes or disease, that is, as the eye has present an amblyopia, which does not permit its use in conjunction with the fellow eye, and as the internal rectus muscle is shortened and weakened as a result of the operation, the eye finally diverges.

The variety of amblyopia or suppression of the visual image in question is apparently a purely psychological condi-

dition; ophthalmoscopic examination indicates a perfectly normal fundus, although the eye is generally hypermetropic. The nerve centres must certainly be affected by the continued mental suppression of the visual image and their functions finally practically destroyed. Unless an operation be performed, which results in re-establishing binocular fixation and fusion of the retinal images, the amblyopia persists, being a progressive mental condition made permanent in the nerve centres by their loss of use and exercise of the power of vision. Amblyopia may be and sometimes is overcome, when it is first established, by a proper correction of visual defects: the commencing souint and the increasing loss of sight may thus be entirely prevented without resort to operative interference. Souint generally appears at an early age, when satisfactory examination is not practical; the ametropic condition may be present, but not demonstrable; for that reason the time of loss of vision cannot be definitely ascertained and the question of the probable presence of amblyopia before the onset of the squint, or of its onset as a result of the squint. is very difficult of solution and proof. It is presumed that an amblyopia may come on as a result of squint and persist forever after, even though the eves are brought to a state of apparently perfect parallelism by operation; the vision in the amblyopic eye rarely, if ever, becomes equal to the vision of the fellow eye. The squinting eye cannot, does not, and will not enter into the visual act, and has no ability to, and can take no cognizance of any object which appears on its visual axis; the power of suppressing images having become a condition, and the vision decreased to such an extent that the eve is practically sightless.

Case 1. T. McK., age 19. June, 1887. File forger. Has been cross-eyed since he was three years of age, and states that during his recollection he had been unable with the left eye to discern any object and define its character.

He has a manifest hypermetropia and constantly fixes with the right eye.

R. V. = 20/15; 20/15 w. + 1.25 D.

L. V. = fingers at 6 inches, no improvement with glasses. The fundus was aparently normal.

He applied for treatment, intending to have his squint corrected by tenotomy.

June 13th, while working at forging, a hot file flew from his tongs and struck him in the right eye.

Two hours after the injury the eyeball was examined, a

large wound of the globe was discovered, having extremely ragged edges and involving almost the entire globe, cutting through the cornea, iris, lens, and sclerotic in the ciliary region. Enucleation was advised and performed in the usual manner in the afternoon of the same day.

June 18th. The patient was doing nicely and stated that he believed he could see better.

L. V. = fingers at 3 feet.

Ophthalmoscopic examination discloses a perfectly normal fundus and a hypermetropia of + 1.50 D.

June 19th, was first instructed in locating letters on the test card. His field of vision was limited to any single object upon which his attention was fixed; if placed directly in front of a test card with the region of the macula in the axis of vision he could see L. V = 3/200. If allowed to read the letters on a plane of his own choosing, bringing the hypersensitive retinal spot into use and wearing + 2 D., the test card would appear to be 13 inches to the left of its actual place of hanging; but he was able to read 2/70, and as his instruction was continued he read 2/15 and at times 2/12 and 2/8, the letters being apparently moved 10 inches to the left of their actual position. He finally read 4/15.

June 20th, after 15 minutes' instruction, he was able to read L. V.=20/30 w. + 1.25 D. on a new test card, never seen before, stating that in order to see the card he was obliged to look to the left of it, although he apparently saw it directly in front of him; he could read 20/200 without a correcting glass; although there are six cards on the test frame, he insisted that he could only see one of them at a time, and that in its false position.

June 21st to 25th. He has been instructed daily, with constant improvement in the field of vision and in the rapidity with which he could locate the letters and cards, + 1.75 D. having been ordered and worn constantly.

June 26th. He is able to select letters on any of the test cards and now locates the card in its exact position and can see all six cards at once without special effort. His vision for near was tested for the first time since the loss of his eye with + 1.75 D. He was able to read Jaeger No. 9, but in locating a word on the test paper with a pointer he would point considerably to the left of its actual position.

July 1st. The improvement has continued daily since last date. He can read 20/15 with his correcting glass and Jaeger No. 1 at 12 inches, locating the words with a pointer in their

correct place. He declines to accept the + 1.75 D. He had been wearing and was ordered + 1.25 D. His visual field is normal.

January 23d, 1890, nearly three years after the loss of his eye, his vision = 20/15 with or without + 1.25 D. He reads Jaeger No. 1 with or without any correcting glass, although he prefers his + 1.25 D. for reading.

He never has had any pain or discomfort or any blurring of his sight since last examined, and has worked at his trade constantly since that time.

His vision continued the same until the winter of 1896 when he died of pneumonia.

Case 2. J. F., aged 30, a strong, healthy man, applied for treatment at the Paterson Eye and Ear Infirmary. When a child he had a convergence of the right eye which persisted until he was about 17 or 18 years of age; at that time he was operated by Dr. Althoff at the New York Eye and Ear Infirmary; he was not fitted with glasses. He did not consider the operation perfectly successful, as his eye would turn in at times, especially when he became at all nervous or self-conscious.

He was not aware that there was any difference in the vision of his eyes until about one year ago when he called upon an optician for the purpose of selecting glasses for use in reading, in consequence of a scratching, burning and heaviness of the lids which troubled him at night.

He then discovered that he could not see to read as well with the right as he could with the left eye, and that a glass made no improvement in the vision of the right eye either for near or distance. His left eye he thinks was slightly improved both at distance and near by + 1/32 which he bought at that time and has since used in reading at nights. August 28th, 1893, while working at his trade as a machinist he was struck in the left eye by a flying piece of wrought iron, chipping about one-half inch by three-fourths of an inch in size. He immediately applied for treatment. Examination disclosed a wound of the cornea about 3 ' ' in length in the infra-nasal quadrant with the iris prolapsed.

There was an appearance indicating the presence of some particles of iron adherent to the wound which was probably due to pigmentation from the iris, as it could not be removed by the magnet and subsequently disappeared.

The cornea was stroked until the iris receded, although a portion midway betwen the pupillary margin and the limbus

still remained in contact with the corneal wound, the anterior chamber being empty.

The vision of the right eye was then tested and found to be 20/70; no improvement with glasses.

The patient was then sent to the hospital, cold applications were used continuously, and one drop of a solution of sulphate of eserin, one-half grain to the ounce, was dropped into the eye three times a day.

September 1st. The injured eye has made extremely satisfactory progress, the corneal wound having closed, the anterior chamber being re-established, a slight anterior synechia only being present. The patient has suffered but little pain; ophthalmoscopic examination, however, disclosed a traumatic opacity of the lens; the pupil is slightly irregular and there is some circumcorneal injection. Left eye, V. = fingers at 1 inch.

On this date, only four days after the injury, the right eye, on examination, shows R. E. V. = 20/20; 20/20 w. + 1/24.

Ophthalmoscopic examination is negative, no lesion being discovered and the fundus appearing perfectly normal.

September 4th, one week after the injury, the vision is still further improved.

R. E., $V_{\cdot} = 20/20$; 20/15—w. + 1/24.

September 9th. His vision is still improving; on this date, for the first time he is able to read large print at the near point.

R. E., $V_{\cdot} = 20/15$; $20/10 - w_{\cdot} + 1/24$.

September 12th, fifteen days after the injury, the eye used singly had normal vision, the patient was able to read, Jaeger No. 1 at 10 inches.

R. E., V = 20/15; 20/10 - w + 1/24.

L. E., V. = fingers at 4 feet.

September 21st. He has experienced great difficulty in accurately locating objects and has a constant lack of confidence in walking which is decidedly improved since the glass over the left eye was blackened three days previous to present visit. Although he can only see to count fingers at four feet with the left eye, he complains that unless it is covered it interferes with his vision for near or distance, producing a blurring of objects, probably due to a cerebral impression that the left eye is about to engage in the visual act. He states that he feels now as he used to with the other eye before the injury, as though he could do better with one eye closed. When reading with both eyes open and without

glasses he has great difficulty in separating and locating objects and a feeling of confusion and blurring rapidly supervenes. In distant vision he describes a peculiar brightness and distinctness around the line of letters on all sides.

October 4th. R. E., V = 20/10 w. + 1/24.

L. E., V. = fingers at 6 feet.

The vision in the left eye is improved in consequence of the absorption of some of the softened cortex of the lens; the patient finds that he is still unable to dispense with the black glass over the left eye without great confusion, especially when out of doors, although he frequently does not wear the glasses in the house.

November 18th. The patient tested with both eyes open and without glasses V = 20/15.

With the left eye closed and without glasses there was but slight difference in the vision although the patient was much more comfortable. $V_{\cdot} = 20/15$.

With both eyes open and glasses + 1/24 over each V. = 20/15 —.

With the left eye closed and a glass + 1/24 over the right eye $V_{\cdot} = 20/10 \text{ w.} + 1/24$.

The vision in the left eye was fingers at 6 feet. He still wears the glass over the eye blackened when reading and for distance, when walking or cycle-riding. In all the tests of vision the Snellen test type was used, the patient, however, being placed only fifteen feet from the card, although twenty has been used throughout as a numerator of the fraction.

Case 3. L. P., female, 10 years of age, born in the United States, applied for treatment July 11, 1885. She stated that she had always enjoyed good health, but had suffered from more or less frequent headache, attended by nausea since childhood; at 4 years of age she had scarlet fever; her mother and father gave a history of migrain.

The patient, seven months prior to her present visit, fell, striking her left forehead and inflicting a lacerated wound over the frontal eminence about one inch in length, extending in an oblique direction from within, upwards about one and one-quarter inches above the left brow. The wound united in the usual manner without the development of any complications, leaving a cicatrix, which is plainly visible at the present examination.

The mother thinks the child has suffered from more frequent and severe headaches since the time of the injury, although she has been able to constantly attend school until one week ago, when she returned complaining of left frontal headache, which was so severe that she was unable to use her eyes for anything, and was very much distressed by nausea and vomiting.

The headache persisted daily, and, on the third day after the onset, was attended by bleeding from the left nostril. Her nose bled ten times during the next five days, a few minutes each time; she has been affected by nose-bleed previously, but not since the time of the injury, except as here noted. On the third day after the onset of these severe headaches her mother also noticed that she could not turn her eyes to the right side and carried her head to the left; she could neither turn her head to the right or carry her eyes to the left, and complained that it caused severe pain and discomfort whenever she attempted to do so.

Upon examination a marked conjugate deviation to the right was disclosed; she could neither carry the left eye out nor the right eye in even to the median line, either conjointly or singly with either eye covered.

R. V. = 20/20. No improvement with glasses.

L. V. = 20/20. No improvement with glasses.

The ophthalmoscopic examination revealed a perfectly normal fundus in each eye.

July 18th. The case was referred to Dr. R. W. Amidon, whose examination resulted in a confirmation of the previous examination, and, to the best of my recollection, a diagnosis of a probable hysterical element as an etiological factor in the production of the condition; his report in detail has been unfortunately mislaid.

October 18th. In response to a letter of inquiry from Dr. Amidon, the following was sent in reply: "The patient called yesterday, and, upon examination, was able to carry the pupil of the left eye 1''' to the left of the median line, which is 2''' better than she could do when you examined her; she is in good health and has attended school regularly for the last two months, during which time she has taken no medicine. Her mother has decided that since all of the distressing symptoms have disappeared and the child feels well, and has even less frequent headaches than she had before the time of the injury, she will not resort to any treatment for the turning of the head to the left, which still persists, but promises to call again in case the symptoms should return."

R. V. = 20/20. No improvement with glasses.

L. $V_{\cdot} = 20/20$. No improvement with glasses.

Feb. 4th, 1895. Ten years after her first visit the patient called with her mother, who had a subacute laryngitis, and, upon request, consented to an examination; she still carries her head slightly to the left, and cannot carry the left eye to the right to the full extent; she can carry the right eye in; she complains of no headaches and no especial discomfort.

R. V. = 20/20. No improvement with glasses.

L. V. = 20/100. No improvement with glasses.

The ophthalmoscopic examination is absolutely negative, the fundus in each eye is perfectly normal, and there is no apparent error in the refraction of either eye.

The condition present is amblyopia ex anopsia, which has progressively developed as a result of inability to attain parallelism in ocular excursion, followed by psychical exclusion of the visual image, which in time has resulted in physiological loss of perceptive sensibility, but not, it is believed, in any structural change in the eye itself or in the cerebral centres.

Case 1 here reported presents the character and history of many other cases of concomitant convergent strabismus. It shows conclusively that whatever the change which led to the loss of vision, it was not structural either in the eyeball or the nerve centres, but was in all probability a pure case of amblyopia which resulted from the long-continued mental visual suppression induced by the confusion of images caused by the loss of parallelism of the eyes, and that the amblyopia was in all probability the result of the squint.

The amblyopia having entirely disappeared after the loss of the fixing eye, when all the existing conditions were changed, indicates the certainty that in this case amblyopia was a condition and not a disease. The remaining eye, which had been apparently almost sightless, having become excessively amblyopic, after instruction and exercise designed to assist the visual effort, gradually increased its power of vision until perfect sight resulted and the sensitive point returned to the region of the macula lutea. The results of any past amblyopic condition entirely disappeared, the eyeball itself and the nerve centres returning to a perfect state of health and visual acuity.

Case 2 demonstrates not only the existence of amblyopia ex anopsia, but it also shows in an interesting manner how the mere impression of the use of the injured eye affects the nerve centres and clearly indicates that the amblyopic eye does not enter into the visual act even though the eye may be successfully operated upon; and that although it does not re-

sume its functions while the fellow eye is still selected for use, it has the ability to, and does return to its normal condition immediately after the loss or destruction of the fixing eye. The confusion of images, caused by the mental impression of sight in the formerly fixing but now cataractous eye in this case, indicates the persistence of mental impressions and explains why continued closure of a fixing eye in strabismus cases does not frequently result in any material improvement in the vision of the amblyopic eye, the mental impression of the ability to see with the covered eye preventing the amblyopic eye from assuming the function of sight.

The fixing eye being almost invariably chosen to continue the visual act, the squinting eye not only has no stimulus to increase its power of vision but is deterred from resuming visual acuteness by the cerebral centres even if the visual lines have been paralleled by operation, because of the confusion of images accompanying any effort at vision.

The cerebral centres having lost the conscious activity of the visual functions from continued suppression, generally remain in that condition in preference to re-establishing binocular fixation with its attendant confusion and discomfort.

The persistence of the hypersensitiveness of the eccentric portion of the visual field in this case, even after the partial central scotoma had disappeared and central vision had practically returned, is indicated by the peculiar brightness and distinctness around the point of central fixation, and by the decreasing mental confusion in locating objects and lack of confidence in walking until normal projection was finally established.

The difficulty of a return of normal vision in an amblyopic eye is apparent, and in the cases of No. 1 and No. 2 here reported, only occurred after loss of, or loss of sight in, the fixing eye and which in case No. 2 was not influenced by a tenotomy, would seem to indicate that amblyopia is, in a large proportion of squinting eyes, an acquired condition resulting from squint and but rarely a disease which is an etiological factor in the production of squint.

The etiology of acquired amblyopia can be logically demonstrated if it is admitted that hypermetropia produces a constant tension of accommodation necessitating an increased convergence of the visual lines, and that the deviation from the normal axis of vision thus produced causes confusion of images and subsequently diplopia.

The natural tendency of the visual centres is to relieve

themselves of this diplopia which is an offending condition, and relief is attained by a gradual loss of physiological sensibility through psychical exclusion of the vision of one of the eyes. The selected eye may or may not have diminished visual acuteness due to a greater refractive error than the fellow eye, each eye, however, generally having an hypermertopia of a greater or lesser degree which is almost always present and is undoubtedly an important etiological factor in the production of convergent squint.

The importance of hypermetropia as a factor in producing squint is illustrated in the correction of refractive errors by properly adjusted glasses after operations for tenotomy; the relief of the tension of accommodation assisting in maintaining the parallelism of the eyes by removing the cause of the previous convergence, the eyes frequently appearing to be on a perfectly parallel plane with the glasses in position, and decidely converged when the glasses are temporarily discarded.

The conscious activity of the visual functions of each eve is maintained and the condition of visual suppression does not generally occur as long as the eves converge only periodically, or even when the convergence is of the alternating variety: but when constant convergence of one or the other eve is present the mental process of suppression may occur rapidly to an extent sufficient to prevent confusion of images and may subsequently become so excessive that amblyopia will render the eye practically blind in consequence of the continued condition which favors a desire to mentally abstract the power of vision. The facts presented indicate the desirability not only of early operation in all cases of convergent squint before the amblyopic condition is fully established, but also the adjustment of correcting lenses which relieve the tension of the accommodation and should be used in all cases of convergence whether an operation for tenotomy of the recti muscles is resorted to or not.

Cases No. 1 and 2, in each of which the useful eye was destroyed by accident, established the fact that loss of vision from the amblyopia of disuse certainly could and did exist without any diseased condition being present either in the eye itself or in the cerebral centres, as was indicated by the resumption of normal vision. The rapid recovery of perfect vision in the amblyopic eye in each case, within fifteen days, admitted no explanation except that loss of physiological sensibility had occurred, through psychical exclusion re-

sulting from unconscious suppression of the visual image. This amblyopia ex anopsia was immediately overcome when the stimulus of exclusive sight perception incited the functional activity of the dormant, but not diseased, cerebral centres.

Case No. 3 is one of amblyopia ex anopsia which was undoubtedly the result of confusion of the visual image from a conjugate deviation to the left, occurring at an age when definite and positive statements could be made by the patient under examination. The vision in each eve was perfectly normal at the time of examination, which was made seven months after an injury to the brow had occurred. would preclude the possibility of any structural change either in the eye or cerebral centres, as a result of the accident, entering as an etiological factor in the production of the amblyopia. The left eye of this patient, which, at the first examination had perfectly normal vision, became progressively amblyopic after the severe disturbance of the ocular muscles, developed the condition of discomfort resulting from confusion, which necessitated suppression of the visual image to re-establish comfort.

The question of the time when amblyopia will begin to develop, or when vision will be lowered, after absolute suppression of the visual image has been attained, is difficult of solution. In the case reported the improvement in the distressing symptoms occurred before the vision in the left eye was affected, and was without doubt the result of mental suppression, although the amblyopic condition was not yet present.

Psychical exclusion, it would appear, must be constant and continued in order that a loss of physiological sensibility may induce the amblyopic condition. A very intelligent patient, whose occupation as an engraver upon zinc necessitated the use of a magnifying glass for the right eye constantly each day, stated that he thought he could suppress the vision of the left eye in single vision at will. He writes as follows: "I have found by repeated trial that my left eye sees nothing after I have looked continuously through the magnifying glass with my right. It seems as if a fog passed before it, but this only happens while my attention is concentrated upon the magnified object; as soon as I relax attention from the object, even slightly, the sight appreciably returns to the left eye. I cannot suppress the sight of the left eye singly at will." His business is of an unusual character, and can only be

performed by two other men in this country, who are compelled to close the left eye while at work; he has been engaged in it for years, and the vision in the left eye remains perfectly normal. The magnifying glass used is a strong lens situated at a distance from the eye, and is not placed before the eye like the well-known watchmaker's monocular.

The inference that loss of sight increases in a ratio proportionate to the time of the existence of the suppression of the visual image, is clearly sustained in this case by the quality of vision in the left eye, 20/20—up to the period of time when the patient was enabled to resume her school work without any material discomfort.

There would seem to be no doubt but that the existence of the deviation being a source of irritation to the cerebral centres resulted in the production of the symptoms described in the history of the case, and that the unconscious mental suppression of the visual image in the course of time induced per se the amblyopic condition.

In amblyopia ex anopsia, the affected eye converges, for the reason that the condition has been produced as a result of the impulse transmitted from the cerebral centres to the ocular muscles, which necessitates for comfort the subjugation of the visual act in consequence of a difference in the acuity of the vision of the eyes, the result of probable refractive error causing confusion of images and consequence annoyance of the sight centres. The convergence induced by the unconscious mental process results in diplopia which acts as a greater stimulus to the cerebral centres to enforce the mental suppression, in which state comfort can only be attained.

CONCLUSIONS.

- 1. That the existence of amblyopia ex anopsia as a condition is positively proven by the almost immediate return of absolutely normal vision in the amblyopic eyes of cases No. 1 and No. 2.
- 2. That the control of the vision, of the amblyopic eyes by the cerebral centres in case No. 2 is positively indicated, through the confusion of images caused by the mental impression that the formerly seeing eye was about to engage in the visual act when the injured eye was not covered.
- 3. That in case No. 3 the vision in the left eye would become normal providing the stimulus of exclusive sight perception should be permanently established in that eye by loss of vision in the right eye, or in case an operation should be

performed which resulted in the attainment of perfect bi-

- 4. That the amblyopia of squinting eyes is a consequence and not a cause of squint.
- 5. That it is not at all probable that congenital amblyopia the result of lesion or diseased conditions, would completely disappear and the eye regain normal vision under any imaginable circumstances.
- 6. That changes in the muscular balance of the eyes affected by congenital amblyopia, the result of cerebral lesion or discoverable disease, are more likely to be in divergence than convergence.
- 7. That after the loss of the seeing eye, in this condition, the hypersensitive retinal area developed as a result of the changed position of the point of convergence of the visual lines loses its increased visual power and the macular region resumes its function as the visual centre.
- 8. That hypermetropia is the etiological factor in the production of amblyopia ex anopsia; and that it is most probable that squint and subsequent amblyopia is the direct result of hypermetropia in which there is primarily a difference in the degree of the refractive error and in the vision of the eyes.
- 9. That in the cases reported the ambloypia was not due to structural changes either in the eyeball or nerve centres, but to continued suppression of the visual image induced by convergence of the visual lines superinduced by an hypermetropia,

OPERATION FOR ENTROPION AND TRICHIASIS BY A NEW METHOD*

By Professor Lagleyze.

BUENOS AYRES.

(Translated from the Spanish by Dr. Frank Ring, of St. Louis.)

The most frequent complication of granular conjunctivitis is entropion of the upper lid, consecutive to the tarso-conjunctival cicatricial retraction. This may also follow diphtheritic conjunctivitis, as well as burns, wounds and ulcers of the palpebral conjunctiva. Trichiasis, the simple deviation of the lashes towards the globe, derived almost always from ble-pharitis and granular conjunctivitis, presents a symptom-picture similar to that of entropion, and in the majority of cases the operation here described is adaptable for both.

The alterations which these palpebral deformities exercise upon the cornea, comprising its transparency, have always occupied the attention of the most distinguished surgeons.

Numerous methods have been suggested to overcome the entropion of the lids.

It is not my purpose to discuss their merits, nor to elucidate the successive progress of the different operative procedures. But, I declare that, after having tried the principal methods, I have not met one to satisfactorily fill all the requirements. It is undoubted that the frequent failures in the cases of entropion, and the just reproaches occasioned by bad esthetic results, have animated the ingenuity of the surgeon, and have led to the search for better methods. So that, today, the operation for entropion is one of the topics most interesting and attractive for the ophthalmic surgeon.

For the past ten years I have practiced, exclusively, in entropion, whether of the upper or lower lid, a method of my invention, which I have used in more than three hundred cases, without reproduction or injury to the normal aspect of the palpebral opening or to the lids.

My operation does not require general anesthesia, as many other methods do, local anesthesia being sufficient; the instillation of a few drops of cocain solution over the globe, and the

^{*}Archivos de Oftalmologia Hispano-Americanos, Jan., 1905.

injection of the same solution under the skin of the lid to be operated upon. To the cocain solution I add chlorhydrate of adrenalin (solution of Takamine) for the purpose of preventing or diminishing the slight hemorrhage, and also to augment the anesthetic action of the cocain.

The necessary instruments are: a needle-holder, a bistoury, a pair of scissors to cut the threads of the sutures, which are to be of silk, and introduced by means of a number of currencedles of three centimeters in length, more or less. From the complete entropion I employ six needles; for a partial entropion I use a number in proportion to the extent of the entropion.

After sterilizing the instruments, and making the region and field of operation aseptic, I proceed to operate in the following manner:

First. Eversion of the lid, in such a way that the limits of the superior border of the tarsal fibro-cartilage are easily presented in the field of operation.

Second. Penetration of the needles into the conjunctiva, at the level of the tarsal superior border; slipping them between the fibro-cartilage and the skin, traversing the cellular tissue and orbicular muscle, and issuing through the free palpebral border, at the level of the angle of implantation of the lashes. The needles should not be passed entirely through, but, should be disposed so as to form a picture like that in Critchett's amputation. The needles should be spaced equidistant, it being advisable to commence by placing the first in the centre, in order not to be preoccupied by maintaining the lid everted, then insert the others adjoining the centre until the angles are reached.

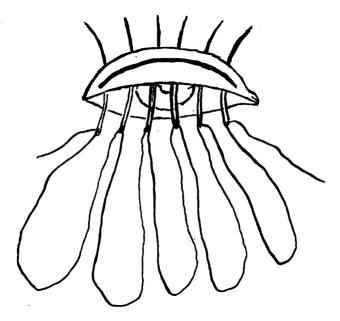
Third. Incision of the conjunctiva and of the tarsal cartilage parallel to the border of the lid, approximately to three millimetres from the free border, from one extreme to the other if the entropion is complete. In partial entropion the incision must be made in proportion to the deformity, it being preferable, always, to extend the incision beyond the limits of the entropion.

The incision is to be made with a bistoury, energetic until obstructed by the needles, it being evident that a result depends principally upon a good division of the tarsus.

Fourth. Pass all the needles and use traction upon each of them, with the object that the deep loops of the thread are

adapted to the surface of the conjunctiva. Immediately after the withdrawal of the needles, the lid returns to its former

position. The ends of the threads which issue from the palpebral border must be separated so as to obtain five loops, if six needles have been employed. The ends corresponding to each loop should be strongly adjusted to a small roll of gauze. Making the knots in this manner, the free border is not damaged, the sutures are not lost in the ulcerated tissues, and consequently present no difficulty in withdrawing them, and besides the guidance has a place for a more uniform action in all the length of the lid, a thing which is impossible when the points are separated and compressed directly over the palbebral border. The advantage of this suture is due to the

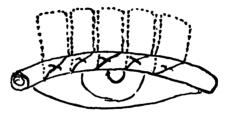


fact that the loops are successive without solution of continuity, thus obtaining a number of loops equal to the number of needles employed, less one.

The sutures are to be withdrawn at the end of seven or eight days.

The mechanism of this operation may be grasped with facility: the palpebral border, from the point of incision takes a contrary direction, is directed forward to such a point that if it is desired to exaggerate the effect, it may provoke a slight ectropion. The angle left by the incision forms a wedge which cicatrizes by second intention filling the tissues with a new growth, and the length of the threads which maintain the

corrective incurvation produces cicatricial lines which assist in the definite cure of the entropion. Perhaps the description given might give rise to a suspicion that some difficulty exists in the operative method, which I regard as very easy, to the extent that no great manual dexterity is required. It might, also, be argued that operative accidents might be encountered, as Dr. Pechin, of Paris, has claimed in making a paralell between my operation and that of Panas. I will not aim to refute the imaginative dangers cited by this surgeon, since they do not exist, and since to pretend to provoke them would be impossible, such, for example as to make button holes in the skin. etc. He has attributed these defects to my operation, with the sole object of augmenting the merits of that of his master, the lamented Professor Panas, whose operation is, without doubt, preferred by Dr. Pechin. The only thing which I will say regarding the parallel mentioned, is, that to



criticize an operative procedure it is necessary to have practiced it at least once, or to have seen it executed, and I suspect that neither one nor the other has been done in this case. The facts are not questions of faith, nor hypothesis, nor theories; and judgment must be based on experience, verifying the results, both immediate and remote.

The purpose of this communication is to make known the modification which I have introduced in the manner of executing the suture which formerly was made with points separated. The object which guides me is the desire to see my operation come into common use, making it known to the greatest number of surgeons, with the end in view that they may try it, and compare it with other methods now employed.

In the Argentine Republic there are several surgeons who use it, and they have manifested their satisfaction. In Italy, Dr. Zanoti has done it several times, and he says of it: "I find the method of Lagleyze treating the straightening of the lids, very rational; this operation, besides being quite simple, accomplishes its purpose entirely. It has given me the best

results, which have been lasting, and I have had no complication." The number of cases of entropion and trichiasis operated by this author in four years (1894-1897) reaches eighty-five, in some of which he has used the operative method of Panas and Arlt, and sometimes that of Gayet in partial entropion, internal or external.

Accompanying this communication are two illustrations, the first shows the three first steps of the operation, and the second represents the operation terminated; the dotted lines indicates the course of the threads.

RADIUM IN TRACHOMA.*

By Joseph C. Beck, M. D.,

CHICAGO.

Radiotherapy has attained such marked success in the ical world, and so many authenticated reports have already been accumulated, that an ophthalmologist cannot help but investigate this new phase of therapeutics. In July, 1904, I read a paper on the use of radium in some ear, nose and throat affections, and at that time went into a detailed description as to the history, chemistry, pathological changes produced by, and therapeutic uses of the various radioactive substances and appliances, especially radium, and published the same in the Chicago Medical Recorder, December, 1904; also in the Larmgoscope, the same month. I, therefore, will omit the repetition of all that, but simply refer you to the literature on the subject in those journals, and only state the most important points in referring to the use of radium on the eye affection, particularly trachoma.

Radium is an element discovered by Curie, in 1901. obtained from pitch blend. It gives off three kinds of rays. A, B and C, which together act very much like the X-ray, only more intensely. It is used in the form of a salt, either bromid or chlorid, and is used in hermetically sealed tubes, in any shape desired. There are various grades and kinds of radium on the market, depending on the radioactivity measured by the electroscope. The least that one should use is a quantity of about 50 millegrams of a 10,000 radioactivity, and the stronger radioactivity the better results will be obtained. The highest radioactive radium that is being used for therapeutic purposes at present is one having one million radioactivity. The expense of the radium is according to the radioactivity,, and of course quantity. I might mention that the quantity of radium that I have used in my experiments is valued at \$100.00, delivered in Chicago, and was obtained directly from the laboratories of Professor Curie.

^{*}Read before the Chicago Ophthalmological Society, March 14, 1905.

The luminosity of the radium cannot be demonstrated very well in the salt, and it is claimed that that luminosity is produced by the radium rays acting on some of the impurities of the salt, as, for instance, barium. However, pure radium may be demonstrated as to its luminosity by the use of the spintroscope in a dark room, giving off a bright greenish light.

In reference to the use of radium on the eye, as early as 1901, Javal and London experimented on blind individuals, those that had no perception of light, and found that by placing a quantity of radium on the closed lid, or exposed eye, no perception of light nor any improvement in the condition followed, contrary to the unauthenticated newspaper reports of some men that could make the blind see by the use of radium. London, Javal and others, however, declare that in cases of partial atrophy of the optic nerve, or in such pathological conditions of the posterior half of the eye, where there still remained some perception of light, that by the application of radium to such eyes they could demonstrate the perception of the radium luminosity, as well as some improvement in the condition.

I have never been able by the use of the salt of radium to produce any impression on a healthy eye as to perception of the luminosity, and it is said that the salt does not produce that phenomenon.

Darier was one of the first to use radium in eye affections, and he reports wonderful results, as, for instance, in iritis, irido-cyclitis, optic atrophy, etc. I have followed his descriptive technique in some similar conditions, but have failed to obtain any such marked result.

Williams has used radium very extensively in eye affections, and reports some very good results, particularly in superficial lesions of the eye, as lupus, epithelioma, and trachoma.

Leduc and Greef have given some attention to the use of radium in eye affections, but I have not been able to obtain any definite reports of their work.

Birch-Hirschfeld, who reports similarly on the use of radium in trachoma cases, as do also Hermann Cohn and R. Pardo, gives their results in a number of acute, subacute and chronic trachoma cases. Cohn has succeeded in three cases of trachoma treated by radium bromid, where other methods failed, and is very enthusiastic over his results.

After thoroughly considering the literature on the subject, so far as the report of cases is concerned, and taking the results I have obtained by means of radium in various eye affections, I will state that in this locality, as well as in any other part of

the body, radium acts best on superficial lesions, particularly on glandular or lymphoid tissue. It is positively proven that radium will destroy embryonic life, and retard growth, providing it can be applied very close to the seat of the growth or infection.

The method of application is simply placing the hermetically sealed tube in contact with the tissue, and by experience or experiment, either for ten minutes to a half an hour each sitting, which may be daily or less often. I have used it less than ten minutes at a time, as well as as long as an hour. Complications, as burns, for instance, from the use of radium I have not had in a single instance; however, I have had some marked reaction in one of my cases following a long exposure. One must consider that the mechanical irritation from the appliance which must remain in contact for such a long time is liable to start up an irritation that may be mistaken for the action from the radium.

In making my report, I wish to confine myself to the use of radium in trachoma, and not mention other affections; only I wish to state that I have treated infectious diseases of the conjunctiva, as, for instance, vernal catarrh, blastomycosis of the lids, etc., with varied results; perhaps I had better state, with not very good results at all. Usually I had to resort to the former treatment. However, in contrast to the foregoing mark, I will say that trachomatous conditions were beautifully acted upon and absolutely cured.

- Case 1. Miss L., 30 years old; Russian; came to this country March, 1904. Diagnosis: Subacute trachoma. Had never been treated. The usual symptoms were present, and the findings were on the upper lid in the characteristic regions, where many granules of trachomatous character were present. The treatments were 21 different applications, at first every day for ten minutes, then every other day for thirty minutes, until the final treatment, April 26th. I succeeded in removing every vestige of trachoma in this case, and the condition has remained cured until the present day; contrary to the usual sequence of treatment of trachoma, scarcely any lines or scars are visible.
- Case 2. Mr. A., 33 years; Russian; six months in America. Diagnosis: Marked trachoma, with pannus. Treated five weeks with bichlorid applications to the follicles; always followed with marked pain and great reaction, not influencing the condition in the least. On March 17, 1904, commenced

treatment with radium applied daily to the seat of the disease, allowing the capsule of radium to come in contact with the follicles as well as the pannus. After eight weeks of treatment, I discharged the patient as cured, and recently saw him, and found him in that condition.

Case 3. Mr. L., 27 years old; Russian. Received information of the arrival of this young man from Castle Garden, where he was transferred to the isolation hospital, and was informed that he would have to return to his native country, owing to the infectious disease of his eyes. Through the kindness of Dr. Knapp, I was able to help the people out by having this patient isolated, the eyes protected by shields, and transported to Chicago, where again I isolated him and put him on radium treatment. On December 19th, I started the first treatment, and though the condition at this present time, after having had more treatments than the other cases, is still not entirely relieved; he is, however, sufficiently cured that he can go about making his living.

I shall take great pleasure in presenting this patient as well as the other two at the request of the Society.

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HYSTERICAL BLINDNESS-ITS TREATMENT, RE-PORT OF CASES.

By A. D. WILLIAMS, M. D.,

ST. LOUIS.

Nobody knows what hysteria is. The human nervous system is very complex, manifesting different kinds of functions, some voluntary and some involuntary.

Hysteria is a functional nervous failure and belongs to the involuntary class. I do not pretend to try to explain its exact nature because that is not known.

Up to late years hysteria was supposed to be exclusively a woman's disease, but now men are known to have the disease frequently; consequently the name must be regarded as a misnomer.

Formerly women were accused of "feigning" or "putting on" the disease. Now it is known to be a *real* disease—neurosis—and hysterical women and men are to be pitied rather than censured.

But both men and women are occasionally afflicted with hysterical blindness and the blindness is *real*, not feigned. In such cases the parts concerned in the act of vision absolutely fail to do their legitimate work. I am not prepared to say now whether the condition is *mental* or *functional* failure or both. One thing I am fully convinced of and that is that the blindness in such cases is not feigned, but genuine and real.

My experience shows that the blindness usually develops in both eyes at the same time, but occasionally it develops only in one eye, but the blindness, whether in one or both eyes, is always complete. I have never seen a case where there was partial blindness.

The onset of the disease is uniformly sudden. In all such cases the ophthalmoscope shows absolutely nothing abnormal in the bottoms of the eyes.

Treatment: The most interesting thing in connection with this strange disease is its successful treatment.

In a general way I wish to say that any sudden powerful impression made on the mind (and of course on the general

nervous system) is sufficient to restore at once the vision in these cases, and so far I have not had a single relapse. The restoration of the vision is sudden and complete. Almost any kind of a powerful shock to the mind or nervous system or both will answer the purpose nicely as will appear from the widely different methods of treatment in the cases I give, all of which were permanently successful.

Case 1. A young woman about 23, born and reared in central Kentucky, married and went with her husband to central Ohio to live. Soon she became intensely "homesick" and begged continuously to be permitted to return to her old home. Her mother visited her, hoping to be able to quiet her so she would be contented. In spite of her mother's presence her intense desire to return to her old home persisted. Suddenly she became totally blind and remained so for weeks. Finally the husband and her mother concluded to take her back to her former home to see if the visit would not restore her vision. On their way they stopped in Cincinnati to consult my uncle, Dr. E. Williams, about her blindness. He and I jointly examined her eyes closely, but found absolutely nothing abnormal. So far as we could determine she could not see light at all. Her husband and mother were told that there was absolutely no visible disease and that trouble must be functional or nervous and a visit to her former home might bring her out of the "nervous spell" and restore her vision.

For months she sat in her old home "blind as a bat." She had to be fed and led everywhere and had to be nursed like a child. Finally her friends concluded that her trouble was purely nervous or functional, and determined to give her a fright to see if it would not break the "nervous spell."

The friends agreed that at a given hour all would be in different parts of the house and all would scream, "fire! fire!" running hither and thither, knocking over chairs, upsetting tables and purposely making all the noise they possibly could. The blind woman was sitting quietly in the sitting room when the noise began. She at once struck out on the run, missing all chairs and other things in her way; running down several steps in front of the house without falling and did not stop till she got far out in the yard. When the excitement quieted down it was found her vision had been restored, and that was the end of the trouble.

Case 2. A stout, hearty young lady came from central Ohio (soon after our experience with the first case) to consult us about her total blindness. Her father and mother and

her prospective husband came with her. They led her in the office and were in great distress over her complete blindness. which had lasted for weeks. Her head was down, her eves were shut tightly and her hands were pressed upon her face. Dr. E. Williams asked her to raise her head and take her hands away so he could see her eyes. "Doctor," she said, "if you pull my eyes open it will kill me." The Doctor replied: "I will be responsible for your death; I must see your eves." He managed to pull them open and found that both eves were bright, clear and perfectly normal. He then said to her: "I know exactly what you need; you will be out of your trouble in no time." He then went to the test case of glasses, took out a pair of plane glasses, put them in the frames and put them on the blind girl, saying, "now you are all right." She at once raised her head, opened her eyes, looked at her father and mother and at her escort and exclaimed. "I can see!" Whenever the glasses were removed down would go her head. her eyes would be tightly closed and she would press her hands upon her face. This experiment was repeated a number of times, always with the same result. Finally she was advised to wear the glasses constantly except when she was in bed. That was the end of her blindness.

Case 3. A middle-aged Irishwoman called to see me several years ago from central Missouri. She was thin and deliicate in appearance, but was not and had not been sick. She was the mother of several children. The husband and all the children came with her to the office. She was led in with a sunbonnet pulled down over her face and with both hands pressing hard upon it. The husband stated that she had been in this condition for several weeks and could not see anything. I pulled the sunbonnet off and her hands away against her will and began to pull her eves open when she said: "Doctor, if you pull my eves open it will kill me!" "Be not frightened, madam; people do not die so easy as that." I managed to get her eyes open and found them perfectly bright and normal. I then put a few drops of cocain solution into both eves and waited for results. In a few moments I could see the orbicular muscles begin to relax and the lids began to open: in less than 2 minutes the eyes were wide open. She looked at her husband, at her children and at me and said: " I feel right foolish!" "That is just the way you look," I said. She sat a moment, looking at husband, children and things in the room, and exclaimed, "I can see!" She continued to gaze around for a few moments longer and turning to me, said:

"Doctor, you must have touched me with Divine Power!"
"Very true," I said; "for there is plenty of Divine Power in cocain." She walked out of the office with head up and eyes open, seeing like other people, and I suppose she has had no further trouble, as I have never seen her again.

Case 4. In last December a stout, hearty young fellow, 18 years old, called to see me and gave the following history: "I have been going to school regularly and have not been sick lately. Three weeks ago I noticed I had slight pains in and about my right eve. They were continuous, but not se-They lasted for several days, but gave me very little trouble. One evening I noticed the pains were severer than usual. I went to bed and slept all night. Next morning I was greatly surprised to find that my right eve was totally blind. I could not even see light with it. It continued totally blind for ten days when I became uneasy and started to the city to seek advice. On the train I had to take a seat next to the window by the side of a drunken man. I turned my seat back and was soon two-thirds asleep. The train had not gone far till the drunken man began to monkey with his pistol without my knowledge. The pistol went off and the ball grazed my thigh and buried itself in the cushion of my chair under my leg. I never was so frightened in my life and I jumped clear over the man in the reclining chair in front of me. When I got over the fright so I knew what I was doing I found that the vision in my blind eve had returned to me in perfect form and has continued good till now. I continued my journey to the city, being determined to see you and learn what was wrong with my eye. Now I am here for an examination and want to know what made my eve blind. I wish to say the pain in and about the eye continued after the blindness, but entirely disappeared after the severe shock."

I examined the young man closely and found that both eyes were emmetropic and the vision in both was perfect. The ophthalmoscopic examination revealed absolutely nothing abnormal in the bottom of either eye. Both fundi were exactly alike. I explained to the young man that there is absolutely no visible disease in the eye; that glasses are not needed and vision is perfect, explaining that the blindness was caused by some "nervous condition" or "functional failure" on the part of the seeing parts of the eye and I could promise him he would have no further trouble from blindness. I advised him to return home, continue school and forget that he had ever had such trouble. I reminded him that he owed the drunken

man a debt of gratitude for frightening the wits out of him and thus restoring his vision. I had a letter from this young man a few days ago, saying he is still in school and has had absolutely no trouble since I saw him.

Case 5. A young lady 19 years old from Southwest Missouri called to see me last fall along with her father, mother, sister and other friends. The girl was rather thin, inclined to be nervous, could not sleep well and would cry on the slightest pretext and often without any cause. She had been habitually constipated ever since she was 10 years old.

The history showed she had had persistent aching in and about her eyes for months. This aching was not severe but continuous. It did not depend on the use of her eyes, and was present when she would wake up at night. About 4 months previous she noticed that her left eye would at times become totally blind for a few minutes and then vision would return.

This state of affairs continued for some weeks. While riding on a train she met a physician, who, having previously treated her, told her on the train her left eye was totally blind and she would never see with it again. She immediately tested the vision and was much surprised to find it totally blind. When I first saw her the eye had been continuously totally blind for about four months. The slight aching in and about the eyes had persisted all the time.

I found both eyes perfectly bright and clear. The ophthal-moscope revealed absolutely nothing abnormal in the interior of the eye. Suspecting that ametropia might be at the bottom of the aching, in spite of the fact that the vision was good in the right eye, I relaxed her focusing power completely with atropin and found that the full measure of her ametropia was—80 sperical glass (numeral.) The fact that the use of the atropin did not stop the aching indicated that strain was not its cause. I asked my friend, Dr. A. V. Campbell, to examine the eye internally and he stated positively that the fundus was perfectly normal. So far as could be determined there was no perception of light in the left eye.

I explained privately to the mother and father the nature of her trouble and gave it as my opinion she would get her vision back, if they would have her treated as I advised. I explained to them what my experience had been in such cases, assuring them all had regained their vision permanently. I told them their daughter would have to be severely frightened or shocked in some way and suggested they allow me to take her to the Baptist Hospital and have her shocked

with static electricity. They did not take to the idea, fearing it would injure her nerves, as the daughter was known to be very susceptible to electricity. I then gave her full correction glasses and advised her to wear them constantly, except when in bed. I gave her tonics internally and general directions about her general health, exercise, etc., until we could see what would happen.

She went home, wore the glasses constantly and took the tonics internally. After two months she wrote me that her general health was better, but she was much more comfortable without the glasses than with them and asked permission to leave them off entirely. Her left eye continued totally blind and the aching continued. I answered, telling her to leave glasses off and stop all medicines. About that time the case of the young man, reported above, developed and terminated so tragically. The father of that young lady sent that young man to me and of course learned how his vision was restored. That naturally made the parents hope and even think that a fright or shock would restore vision to their daughter's blind eye.

So on the 21st of February the daughter returned with a letter from her mother saying, "Treat my daughter as you would, if she were your own child."

I found the condition exactly as it was before, only her general health was better. There was no perception of light in her eye. I tried my best to deceive her and make her see with the blind eye, but failed.

I visited the Baptist Hospital in advance and explained the nature of the case to Dr. Morris, who is in charge of the hospital, and told him I wanted him to apply the static current to her left temple and about the left eye as strong as he could so as not to do any harm.

The next evening I called with the young lady to have her shocked. She knew something was going to happen, but she did not know exactly what it would be; without ceremony she was seated on the stool and the machine started. At first the "electrical bath" played for a moment; then without warning the electrical sparks were shot thick and fast into her left temple and about the left eye from behind and continued for about half a minute when they were stopped for a few moments and then continued for another half minute in the same way. The negative pole of the battery was used. Immediately she could see with her "blind" eye our hands, count our fingers, see rings on the fingers and all objects in the room.

Certainly the popping, cracking and hissing of the sparks were enough to take hysteria out of anybody's eye. To our surprise she never whimpered. When she got off of the stool she said she did not want any more of that. Did it hurt? "You bet it hurt." "Why did you not hollow?" "Because I had made up my mind not to make any noise."

She cried all the way back to her room. "What is the matter now," I asked. "Oh, I am crying for joy because my sight has been restored. Is that not enough to make me cry?"

Next morning I tested the vision in the left eye and found it 12/20, not improved by glasses. The second morning it was 12/15. With general instructions about managing her habitual constitution she went home.

Today I had a letter from her saying, "I took a severe cold on the way home, which settled in left temple and eye. Have had three hard spells with the left eye; it seemed to draw from the temple to the eye and the latter felt like it would burst for about 30 minutes."

"I bathed my feet in ammonia water. I do not think I see quite so well, but think, after the cold passes off, I will be all right. There is a dull pain about the eye most of the time."

The peculiarity about the last two cases is that only one eye in each was involved. Both eyes in the other three cases were involved. All the cases were females excpt Case 4, who was a stout, healthy school boy.

It is now known that "hysterical" diseases are not confined exclusively to females as was previously supposed. Hysterical blindness is a real disease; not feigned or put on.

While writing up these cases it occurred to me that it would be more correct to designate this condition as "mental blindness" rather than "hysterical blindness.

It will be observed that the method of treatment was not the same in any two cases, yet all regained their vision. The success in these cases proves that any bad fright or strong mental impression is sufficient to restore vision in all cases of "hysterical blindness," and it is certainly very strange that there does not seem to be any tendency to relapse.

EYE-STRAIN.

By E. H. HAZEN, M. D.,

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Much knowledge in the science of medicine, as well as in other branches of science, is arrived at by the purely scientific or inductive route. In medicine the pathologic and histologic investigation is carried out and the remedy is afterwards found, but valuable remedies are often established by the empiric method. A series of facts is obtained by experience which is efficacious in relieving serious symptoms, and then theories are spun to account for them. Many errors of etiology have to be set aside by some collection of facts which had to be accepted. These two methods, often, are at variance with each other; each proceeds to elicit truth.

The science of the refraction of the eye and its connection may be considered as evolved by the scientific method, and is one of the most beautiful triumphs in medicine. The writer has something in connection with eye-strain which he has arrived at, more by the empiric route which he is unable, yet, to explain, because it deals with that part of the physical economy, the nerves, which are yet the most intricate part of the mystery of the phenomena of life.

The amount of benefit accruing from the correction of refraction in the last forty years, has resulted in the belief that there need be no other cause sought, and many of the writers hold this to be axiomatic. But with the light that we have now at hand eye-strain can no longer be considered as caused, only, by errors of refraction.

If the facts will be considered without prejudice, looking fairly into the condition, a large number of those who are emmetropic or are made so by glasses, it will be found are still suffering from symptoms which are given other names than those of eye-strain, but nevertheless belong to it, but which, when no change of glasses is advisable, get the advice for a vacation, recreation or medication, and are told that they are relieved of eye-strain as far as can be.

The troubles of the extrinsic muscles of the eye, when recognized have been dealt with from a wrong standpoint, and the importance of their part in eye-strain has not been appreciated because of a misconception of its cause, misdirection of its study, and the failure of the remedies advised. The books have been directing the etiology of these difficulties to the position the eyeballs take to each other and base the direction of relief principally to the correction of their imbalance. A few have something to say of discipline and the strengthening of the muscles, but when this is taught the idea is conveyed that the muscles are to be developed in muscular fibre.

It must certainly be recognized that the symptoms of muscular asthenopia are not at all commensurate with the amount of imbalance of the muscles; that in orthophoria there are as severe symptoms as in heterophoria, and that there are numbers of persons who have high degrees of heterophoria and have no inconvenience therefrom; that also symptoms may be entirely removed and no change made in the heterophoria. The imbalance of the muscles is no guide for the relief of pain.

Nature has a compensation in what may seem an anatomical deficiency or redundency of muscle, by adapting the nerve force to the condition, and when a greater excursion is to be made by a muscle in one condition than by another, a greater amount of nerve force is called on.

More attention has been awakened of late to the nerve connection of the extrinsic muscles and there is a suspicion that reflex action may exist from disorders of this system. as well as from that small portion of one of the same nerves which supplies the muscle of accommodation; and it is beginning to dawn upon the eve-man that this system of nerves and muscles, which does the great work of fixation of these organs in the common vocations of life, figures greatly in eve-strain, and that their efficient adjustment must be a great draft on the nervous force of the brain. That this system for fixation of this binocular apparatus is a complicated one, is remembered when we consider the anatomy. Each eve is supplied with six muscles which get their nervous supply from different parts of one-half of the brain-some with an independent nerve and some with nerves supplied to more than one muscle. These congeries of nerves must act in harmony with their fellow organ, the other half of the brain supplied with like fixtures by the opposite side and concert of action must be maintained incessantly, for even in a common stroll, to have a sense of security and a proper equilibrium we must be able to measure distance, direction and our relation to objects about our path continually; a thousand or more photographs are taken a minute and the impressions are sent to the brain. When riding in a vehicle: when attending a theatre or on shipboard the requirements are much greater. and this excessive draft is often the cause of nervous disturbance. That this apparatus, itself, independent of ciliary complications within the ball, should get out of order, and be the cause of much trouble has not been properly considered. We have been too well satisfied with the wonderful results which have been obtained by the refractionist in removing many symptoms: the rhinologist has followed the branch of the eve nerve that escapes into the nose and has achieved good results, but that combination of nerves upon which we depend so much, as a pilot through the maze of the difficulties every hour, is the last to get proper attention.

The means of diagnosis and treatment in this part of ophthalmology as now practiced are crude and not up to the standpoint of other paraphernalia for the eye. The manipulation of the rods, prisms, lenses, and batteries in the hand or dropping them into a box, or pushing them into a trial frame on the nose of the patient is coarse, awkward and annoying to the patient and is hard work for the surgeon. Smooth manipulation, exact axes in direction, in such a way that the patient's eye-lashes may not be touched, the nose indentated, or cause made even for winking, are all indispensable to a proper handling of these cases, and to make headway in their study and treatment.

The affection of these nerves in connection with eye-strain not being recognized, glasses are resorted to in very low errors of refraction, and patients are subjected to the wearing of a saddle on the nose unnecessarily. As a general rule, in very young subjects there is no need of a half or even a full dioptre of spherical glasses and low powers of cylinders, when the axes of the cylinder are horizontal or vertical, if the extrinsic muscles are in reasonable tone, especially those supplied by the third nerve.

A pair of lenses may partly, or even wholly, relieve patients for a time of symptoms of eye-strain, and because they are unable to use their eyes without them, it is regarded suffi-

cient evidence that glasses are the sine qua non, but this is very often a mistake. There is now not so much virtue in curing eye-strain, only with glasses, and subjecting patients to this cumbersome nuisance, especially as it is now known that eye-strain comes as well from muscular trouble, and is easily relieved.

We know there are thousands who have considerable errors of refraction and have no inconvenience therefrom, and who are doing severe work, and this we know is because they have nerve vigor. It is true there are no persons who are perfectly emmetropic, and one would suppose from reading what some writers say, that this discovery was a conclusive argument for the universal use of spectacles and that they were only waiting the day when 99 per cent. will be subjected to this voke.

It is never good practice to be governed by fads, to conform to custom or follow fashion in the practice of medicine, and the oculist better beware of this reputation and broaden out and look into each individual eye-strain, and not pitch on the bows in every case.

Enough has now been done by competent hands to establish the fact that there are some very grave symptoms in eye-strain which have been relieved by treatment of the extrinsic muscles, and that it was not done on the theory of ciliary strain, and was so quickly done that it could not be accounted for on the theory of muscle building or from a correction of muscular imbalance.

The scissors in imbalance or heterophoria have been relegated to the past.

We must now turn to this recent finding that gets relief by gymnastics, of the extrinsic muscles, which brings such unexpected results.

The writer has been treating these cases since 1896 by a regular system, with an instrument of his own construction, called the Kratometer, which meets all the requirements as set forth above. These cases of muscular asthenopia which have been troubled from two to fifteen years are perfectly relieved in, on an average, twenty treatments. Many who had been wearing low powers of glasses have voluntarily laid them aside.

The discipline of the third nerve distributed to the adducting muscles, being toned up, that part going to the muscle of accommodation is also strengthened and no longer needs the lens-crutch. Eyes that have had an hyperemia for years

and have been subjected to all kinds of collyria have whitened up in six or eight treatments, and look as pearly as the inner surface of a seashell; and symptoms extending over the head, down the spine and even to the digestive apparatus, have all been dissipated by this simple means.

For want of a better nomenclature, these muscular troubles are classified under the head of muscular asthenopia. The fixation power in these cases is very deficient and in protracted cases the individuals so affected allow incidents to pass before them without notice. They become stoical, irresponsive, dull, stolid, somber; even take on a moody, morose, apathetic manner; lose all vivacity of spirit and learn to be indifferent to everything. Their eyes generally become red, bleared and soggy; the lids are narrowed and the eyes sunken, and many eyes turn outwardly.

How it comes about that the symptoms are relieved in so short a time is yet to be explained. In the treatment of these cases, one observes that progress may be made slowly up to a certain point, when, all at once, it is finished quickly, as if the nervous force had been clogged and broken away, as in a thrombus, and the standard is then soon reached.

It is astonishing what a wide field the treatment under the head of muscular asthenopia will encompass. Cases that have been the rounds with "pockets full of glasses," fitted by the best men in the country, and suffering with a great variety of symptoms, have been relieved in ten days or two weeks. The permanency of the cure is unexpected—not one in twenty having relapsed in from two to eight years.

The study of the physiology of this fixation process led me to advance the theory, in another paper, over a year ago, that sea-sickness is caused from the inability of the system of eye muscles to perform the excessive work they are suddenly called upon to perform, and reflex symptoms soon take place. The prophylactic is bringing the muscles to the standard of strength. This prediction has not been verified as yet, but if this proves correct, with the easy means of causing immunity, the benefit to the travelling public will be incalculable.

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THE ETIOLOGY OF ASTIGMATISM.

By George M. Gould, M. D.

PHILADELPHIA. .

It is amazing that ophthalmic science, especially that of Europe, has never concerned itself with the question of the origin or the effects of astigmatism. The least curiosity as to these matters would have been worth a thousand times all the study of a thousand text-books, covering the mathematics of the condition. The causes of astigmatism are thus epitomized by Norris and Oliver:

"Traction on the cornea, as seen in peripherally situated cicatrization wounds, either accidentally or purposively made, superficial tumor-growths at the corneal limbus, symblepharon, and ptervgia, all may be the production of astigmatism. Direct and indirect pressure on the cornea or the sclerotic, as, for example, from new growths that are situated either in the orbit or in the evelids, and spasmodic contraction of the orbicularis muscle, are said to give rise to corneal astigmatism. In contradistinction to this, irregularities of the tunics at the posterior pole of the eye may produce an astigmatism by faulty curvatures of that portion of the retinal sheet which is situated at the macular region. Astigmatism is also said to be caused by intraocular pressure and tonic contraction of the exterior ocular muscle-groupings. The variety that is produced by lid-pressure is either a temporary form of the regular type, or, more frequently an irregular one of meridional character. In this connection it must not be forgotten that a spastic condition of a series of extraocular muscles, as is occasionally seen in some types of nerve disease, may give rise to temporary forms of the condition."

Norris and Oliver supposably summarize the ophthalmic knowledge of the day; and this series of obfuscating statements may therefore be taken as illustrative of the vagaries and indetermination of professional opinion upon the subject. There is not a word or suggestion in it which helps the student of physiology or of medicine, or the practising physician and

refractionist, to understand the origin of this tremendously important form of ametropia. The baneful effect of anatomic pathology to the exclusion of physiologic pathology is seen in every line quoted. Wounds, tumors, inflammation, tumors, spasms, tumors, mysteries, tumors, nerve-diseases, tumors how do these things, found once in a million cases of astigmatism, help us to understand the cause in 999,999 cases, where tumors, inflammations, new-growths, and spasms have not existed? Macular malcurvature is also listed, without a statement as to the size of the image of a test-letter at the macula. Intraocular pressure, the true cause of corneal symmetry, is also adduced.—a cause that acting alone would reduce corneal asymmetry or make it impossible. The actions of the external ocular muscles almost surely, have at best only a secondary and subordinate role in causing astigmatism. The one real and dominating cause, lid-pressure, is befoggingly called "an irregular form of meridional type," or a "temporary form of the regular type." But what is this regular type? Evidently, tumors and wounds and the rest, judging from the list above. But if not, there is not the least hint of an explanation either of the cause or nature of this all-important "regular type." Beauty, sang the poet, is its own excuse for being, and so evidently is astigmatism. It is, because it is. Johnson rebuked Boswell severely for asking why a pear is shaped as it is and an apple of a different shape. "God wills it." "Fate rules us all," "Allah is Allah," are quite as satisfying explanations, either of astigmatism or of the world, and of our destinies in it. If we turn to other text books we find the explanation of the most to consist in the platitudinous "congenital or acquired" which is equally amusing and unsatisfactory. If congenital, what caused the failure to secure an all-desirable corneal symmetry? If acquired, how and why? Astigmatism of the "unglassed" is wrecking the lives or happiness of millions of people, and necessitating an expense of millions of dollars by those who wear glasses. Its nature and cause therefore become highly important matters. One will occasionally find a statement seemingly made in the interests of the tenotomists that the tensions, malinsertions, or abnormalisms of the external ocular muscles are the cause of corneal malcurvature. But when one asks how this is possible or probable, no answer can be found. The shorter radius of curvature in the vast majority of cases is the vertical, but if there is any excess of tension of one set of muscles over the other it is that of the combined internal and external over that of the combined superior and inferior; and this would cause the lesser curve to be horizontal. Surely then the role of the external muscles is nil, or subordinate and secondary. It seems probable that the internal and external recti muscles act to neutralize the tendency otherwise caused of the vertical meridian of the cornea to be the shorter. Cooperating toward this end of symmetry is the intraocular pressure, which would tend to equalize inequalities of curvature, but which is erroneously named as a cause of them. A single or at least a usual and dominating cause for the lesser vertical curve is to be sought. Have we not overlooked this? Is it not evident that this physiologic, simple, and always present source of the mischief is lid-pressure? Those few varieties due to abnormalism of the lens, to traumatism, or to inflammatory diseases are, of course exceptions to this rule, evident, pathologic, and sui generis.

There is a striking clinical proof of this lid-pressure origin which I once showed in a paper on Albinism. If hyperopic, as the majority are, albinos have high degrees of astigmatism at axes 90°. The long continued and intense efforts to shut out the light by closure and pressure of the lids naturally results in a highly shortened radius at axis 90°. But what happens in the albino in a high degree and pathogenicly, also happens in all human beings in a less degree, and physiologicly. In the first volmue of Biographic Clinics I suggested the existence of as many as a dozen distinct and co-operating mechanisms whereby the retina is shaded and the conditions of retinal sensibility preserved. I should have added another—the habitual position of the border of the upper lid, when the eye is "open." just at the upper edge of the pupil. Indeed it commonly is below the upper limit of the pupil. The greater part of light either outdoors or indoors comes from above, the retinal image being formed by reflected light entering the pupil from below. The result is evident that the evebrows, upper lid, and its lashes, act as shields against the light from above. This shielding is plainly one of the great requisites of clear retinal images and unexhausted retinal sensibility. All of this has much practical significance as to the methods of artificial illumination of our houses and public buildings, especially of our schools. Its ignoring is a fruitful source of social and educational evils. The highly necessary exclusion of the light from above is therefore chiefly brought about by the placing of the border of the upper lid so that it prevents the entrance to the pupil. in the usual head-position, of the light from above. In doing so it necessarily presses upon the cornea just above its central or most important optical portion, and this pressure causes the shortening of its vertical curve which exists in nearly all eyes.

If the eye is hyperopic the usual astigmatism is at or near axis 90°, the shorter curve being vertical. If the eye is myopic, the great majority of axes are about 180°, the essential or anatomic condition as to the radii, remaining, of course, morphologicly identical. In hyperopia the refracting power of the 180° meridian is artificially and positively made equal to that of the 90° meridian by the plus cylinder at axis 90°. In myopia conversely the shorter 90° meridian is made equal to the reverse meridian by the negative or minus cylinder at axis 180°. The total correction of the combined myopia and myopic astigmatism could of course be corrected by a high minus spherical lens, and the astigmatism then neturalized by a plus cylinder at axis 90°. As this would make a more bulky and heavy lens, it is practically better to use the minus cylinder combined with the minus spherical.

Dr. Bennett has shown that in presbyopes the plus astigmatisms at 90° tend to reversal and become those of 180°. No explanation has been offered of this fact so far as I am aware, but if it is true that the lid-weights and pressures are the preponderant physiologic causes of astigmatism, it follows that the change to 180° astigmatism in old age is due to lessened lid-pressure and lessened refraction power of the globe. The greater tension of the internal and external recti then come into play. Everyone knows that in the old the lids are less heavy and thick and tense owing partly to the absorption of their fat, etc. While seen through the ophthalmometer, the raising of the patients' lid by another, softly from the globe. will lessen the amount of astigmatism. One cooperating cause of lessened lid-pressure in the old is the retraction of the globe or lessened pressure upon the globe from behind, due to the absorption of orbital fat, etc., whence comes lessened refraction power and tendencies toward myopia, or 180° astigmatism. Another cooperating cause is probably lessened intraocular pressure in the old.

These facts and their explanation illustrate the fact of the continuous and retained resiliency of the cornea, and that the astigmatisms or variations from uniformity in its radii are caused by some agency external to the globe itself. In itself the cornea is or would be nearer an ideal contour than the vast number of astigmatic abnormalisms would at first sight seem to warrant. Operating alone the normal intraocular pres-

sure would prevent astigmatism. It is the effort to protect the pupil from light from above, and the eyeball and cornea from exposure, drying, light, injury, etc., which produces the morbid factor of astigmatism. Hence the silliness of the quackery which would abolish astigmatism by massage of the eyeball. If shadowing of the pupil were not necessary, if convergence and downward-looking were not demanded, if the lids could be taken away, if winking were abolished, if light and dust were not admitted, if tears were not needed for continually washing and lubricating the globe, etc., then astigmatism would be absent in the great majority of eyes.

In some animals we find an approximation to these conditions. Has any one studied the biology of the pupil, its shape. size, varying conditions, and functions, in different types of animals, and according to circumstances? Valuable lessons and suggestions would doubtless result. In the purest types of nocturnal animals, as the owl, there is no descent of the upper lid, the eye is always "wide open," and the pupil is in permanent mydriasis. The dazed condition of mind of this animal in the day is explained by its inability to form a useful retinal image, swiftly, and the resultant danger in flight. will certainly have no astigmatism. There is the same wide retraction of the lids in the mixed night-prowlers, such as the cat, but there is provision for safe activity by day in the pupil narrowed to a vertical line. Astigmatism is also probably absent here. But the 90° line-like pupil is highly suggestive when the animal's habits and powers are considered. A glance through the illustrations of any book upon birds and animals with this thought in mind, is peculiarly illuminative. The conditions of the life and hunting-habits, for instance, of the birds. in relation to the visual function, governs the entire matter of the feathering and expression of the face. When the conditions are most difficult, as in the owls, the feathers are often arranged in two wide-flaring concentric radiating flattened circules of feathers, to give the eyes the greatest ease of seeing in all directions, especially desirable in a bird flying in the night, and among woods, etc. In the hawks and eagles this is not so necessary, and the upper lid and feathers may be used to shade the eye from above. In birds exposed to dangers from above, the upper lid must be completely retracted. In land animals the same law holds—the upper lid descends to shade the retina whenever the conditions and habits permit. The exophthalmos, or the retraction of the eveballs, in all animals, also depends upon similar necessities

and conditions of living. In erect man the overhanging evebrow and better shading of the eve by many mechanisms, is at last rendered possible, with higher visual function and judgment. But with the dropped upper lid, and its pressure upon the corneal border there is the production of the dangerous astigmatism! It is at least certain that one of the most valuable aids to the progress of civilization is the correction of the astigmatism of the modern man. Dr. Woodruff has written a most excellent and suggestive book. "Effects of Tropical Light on White Men." but a great modifying truth was omitted in the nonrecognition of the role of eve-strain, the effects optically and pathologicly upon the eve itself of tropical light. Almost every page of Dr. Woodruff's volume needs restatement from this standpoint. The incidence of disease, the peculiar social customs, as the midday siesta, clothing, etc., the mental and moral questions, gain a rephasing by an adequate conception of ocular physiology and pathology.

Observation shows that the lower lid has little effect in the origin of astigmatism. It does not rise in winking or sleep so much as the upper falls, and indeed hardly rises at all. This shows the dominance of the necessity of shading the pupil from the light from above. The function of the lower lid is a lessening one in our civilization in which we are looking downward more and more. This more exacting demand for a finer outworking of the retinal function required that the shading lid-edge should fall precisely so as to prevent the disturbing and wearying entrances of light from above. This descent and habitual accurate placing has brought its inevitable pathogenic astigmatism or bending of the vertical meridian of the cornea.

If the lower lid, as is evident, does not press against the cornea from below, as does the upper from above, it will follow that the sharper curve will be of the half above the center of the pupil. A peculiar type of irregular astigmatism must often result, and one which our symmetric astigmatic spectacle lenses and test-lenses will not neutralize. The thought is thrown out here in order that some one more capable than I may undertake an investigation and elucidation of the theory, and possibly devise lenses which will neutralize the varying refraction of such a cornea, greater above, and less below. If this variety of astigmatism exists it must follow that there is eyestrain unsuspected and uncorrected by our the lid-pressure is the chief cause of astigmatism and that the

⁽¹⁾ I have had one patient who could voluntarily raise the lower lid over the pupil without any descent of the upper.

some of our failures to cure in certain puzzling cases. That upper lid is the chief source of the phenomenon, as also that present cylindric lenses, and which may help to account for it produces an unequal degree of convexity above and below the center of the pupil, is demonstrated by a simple experiment. I have, for instance often found that a distant object, especially at night, and if made up, as outline letters and signs by electric lights, can be seen much plainer by widely "opening the eyes." Conversely, by nearly closing the lids, the increased astigmatism soon shuts out the form of the letters.

One of the great mistakes made by oculists in the past has been the inexact diagnosis of the axes of astigmatism. It is strange, and even blameworthy, that all of us have not individually and collectively discovered that there are more astigmatisms than we had supposed at axes slightly different from the usual 90° and 180°. If we found them near these locations we negligently called them 90° or 180°, and thought no more of it. And hence the continuance of suffering on the part of many of our patients, and the failure to recognize fully a great truth which will eventually be seen to constitute one of the greatest of modern medical discoveries. One reason of our inexactness was that we allowed our patients while being refracted to sit with the head tilted from 5° to 20°, and this is the chief cause of our failure to locate certain axes of astigmatism with accuracy. By a simple test any one can demonstrate that these slightly variant axes necessitate an inclination of the head to one side in order to increase visual acuity. Long continued head-tilting in the young, whether from astigmatism directly, or from the morbid writing-posture, the result of visual necessities, produces secondary and compensatory lateral spinal curvature, and there are thousands of spines being thus morbidly curved. When the fact is clearly perceived, and when the role of preventive medicine is recognized, there will be a revolution in orthopedics, and the secret of thousands of medical cases of mysterious and persistent ill health will become clear. For spinal curvature, functional at first and for long, is a hundred times more frequent than the profession dreams. And in an erect animal like man, such a wrenching and twisting of the spinal column is productive of strange, far-away, and multiform diseases and symptoms. Innumerable patients are being treated unsuccessfully for these symptoms and effects, and the back is never looked at, the spinal abnormalism never suspected; and if recognized its

⁽²⁾ The sign, e. g., "Pennsylvania Railroad," at the Jersey City railway station.

ocular origin would not be admitted. The trouble is functional for so many years that if posture and habits are not noted, and if refined methods of diagnosis are not instituted, the abnormalism would not be detected even if the hasty and superficial examination of the back should be made. As to therapeutics, all the massage, exercises, and physical culture methods that are devisable will not usually effect a cure so long as the head must be tilted in order to see plainly. If under the circumstances the spine is kept straight it will be accomplished at the expense of amblyopia and other kinds of injury and suffering due to eyestrain which nature evidently thinks are worse than scoliosis.

Why these axes of astigmatism slightly varient from "the rule" of 90° and 180°? Every oculist has noted that when not thus at 90° or 180° the axes of the two eves tend to be symmetric, i. e., if the right axis is 75°, 60°, 45°, etc., that of the left will be 105°, 120°, 135°, etc., respectively. They tend strongly to cluster about the vertical or horizontal meridians. and those beyond 20° away are very few. The origin and explanation of the fact I believe lies in the combined effect of convergence and what has been named deorsumduction or downward-looking, multiplied and intensified a thousand fold by civilization. Man is the only animal which has acquired a still doubtful parallelism of the axes of vision. The convergence demanded by civilization is not yet established as a habit or constant ability. But all reading, writing, and handworking requires a crossing of these axes at from 10 to 20 inches from the eve together with a habitual and synchronous depression of their planes from 20° to 50°. The natural result of these functions when combined is to incline the astigmatic axes caused by lid-pressure, normally at 90° in the hyperopic, either toward the nose or away from it, so that the prolonged axes would meet below, forming a letter V, or, above, the same letter inverted, or caret, Λ . The larger number of such symmetric axes are the caret axes in which with the right at 85°, 80°, 75°, 70°, etc., the left will be at 95°, 100°, 105°, etc.

If this symmetry is maintained, and if binocular vision is preserved, there will be no tilting of the head because any advantage in visual acuity gained in one eye by bringing the variant axis to 90° would be neutralized by the pronounced astigmatic blurring of the image of the other eye whose axis would be thus thrown further away from the 90° meridian. Besides this there is a psychic union or averaging of these

symmetric axes, which furthers what may be called the law of symmetric averages. The mechanism whereby these varient axes are symmetricized is thus almost always dominated by the lid-pressure acting as a constant force, but modified by the new factors that come into play with combined convergence and deorsumduction.

What are these modifying agencies? The chief is probably the action of the obliques in rotating the eveballs under the new and great exaggerations of combined convergence and downward-looking demanded by civilized life. Another may prove to be the relative points of insertion of the recti muscles also concerned in the new morbid task of combined convergence and downward-looking, and the resultant variations of trends of the traction, followed by tilting of the astigmatic axes, modified by and coupled with the interference with free movement of the eveballs by the nasal bones and shape of the orbit. A skull illustrates this anatomically, and physiologically it is demonstarated by asking a patient to fix upon an object held at the extreme near-point with axes of vision horizontal and then observing the difficulty or impossibility of transfixing the object when it is depressed 40° below the horizontal. cause of the switching of the normal 90° axes thus becomes clear. It need only to be noted that civilization with its myriad kinds of "near-work" especially reading and writing, has tremendously increased this need of combined convergence and downward-looking, and at a time of life, during youth and school days, when the accommodation is great, the book or writing held close to the eve, and when the cornea is most plastic. The practical lessons to be deduced from the fact are thus:

- 1. The greatest care necessary in diagnosing these slightly variant axes with the 20 foot tests.
- 2. The duty, frequently of an equally careful retesting the location of the axes at the reading distance. It will be found sometimes that the amount of the astigmatism will not differ at the two ranges, but that the axes will not be the same at 14 inches as they were, and are, at 20 feet. Thus a prescription differing in the axes of astigmatism may be required in the two sets of lenses for distance and near spectacles. This may rarely be the reason why bifocal lenses cannot be ordered, as these require the same axes in both the near and distance lens. It may also account for the inexplainable insatisfaction and eyestrain which sometimes persists in reading and writing after the most careful correction has been made,

although usually this undoubtedly is due to the common, yet commonly overlooked subnormalism of accommdation.

- 3. The wisdom of holding the book as nearly on a level with the eyes as may be, and of sharply pitched desks in writing, whereby the writing paper may be placed opposite the right shoulder. Writing with low and level tables or desks compels the writer to get above and look down upon, instead of off at, his writing, and produces the major part of the 27 percent of the lateral scoliosis of school children.
- 4. The placing of the habitual reading and writing focus at a point critically designed to make it as far as possible without running into the other danger of producing a wearving and physiologicly expensive small image upon the retina. This must be decided upon after careful consideration of personal habits, kinds of near work done, the size of the print, chirography, sewing, etc., customary with the patient; the amblyopia present, the natural acuteness of vision, etc., must also be taken into account. We should, therefore, urge upon patients the use of large, well rounded letters in writing, good black inks, good paper, and the rest, as well as the vertical handwriting always to be emphasized. In general, both upon the patients personally, and persistently upon the public, we should in season and out of season, advise the use of large type, as large as may be, the blackest and best printer's ink, wide spaces between the lines, and opaque paper with dead surface. This will enable us to focus the reading glasses at a greater distance, say 16 inches, than is possible with print, paper, etc., that compel a reading distance of 10 to 12 inches. The special application of this rule to needlewomen, typewriters, musicians, artists, mechanics, handicraft-workers, and others, need not be described.

Intermediate between the regular and symmetric astigmatisms and those showing complete asymmetry may be placed an odd variety that belongs to neither class exclusively, and which exhibits traits of both. These are such anomalies as the following:

- a. Both axes of hyperopic astigmatism at 180°.
- b. Both axes of myopic astigmatism at 90°.
- c. One axis of hyperopic astigmatism at 90°, while that of the other eye is at 180°.
- d. One axis of myopic astigmatism at 180°, while that of the other eye is at 90°.

- e. One axis of hyperopic astigmatism at any variant, while that of the other eye is at right angles to it, as e. g., one at 75° the other at 165°.
- f. The same as regards myopic astigmatism.

All these types bear witness to a common cause, the lidpressure, chiefly, acting with a different incidence in the two eyes, and specially modified perhaps by many conditions, such as orbital shape and space, habits and necessities of work, onesidedness of function or exposure, relative amblyopia of the two eyes, insertions of the extraocular muscles, and others. One may sometimes detect a difference in the physiologic tightness or closeness of the lids of the two eyes in relation to the globes.

There remain the frankly unsymmetric varieties. We have excluded those few due to tumors, traumatism, surgical operation, and the direct action of inflammations of the cornea and conjunctiva. Among those of this class too little attention has been given to those resulting from lid-diseases. A meibomian cyst will warp the cornea and temporarily at least change either the amount or the axis of astigmatism undetected. Palpebral conjunctivitis, incipient granular lids, localized or general in one eye more than another, may increase the lid-pressure and thus specially modify the relative astigmatism. Such inflammations or hyperemias may no longer exist but their effects still remain and show as relative differences in lid-plasticity thickness, smoothness, weight, etc. Relative variations in exophthalmos or retraction of the two eves. in "puffiness" of the lids from albuminaria, are among other possible causes of these variations.

Of true asymmetric astigmatisms the most important class is that made up of those which compel a tilting of the head. (with resultant spinal curvature), in order to see more plainly and especially to see printed letters more distinctly.³ If the axis of astigmatism of the dominant eye varies from 90 or 180 by 5, 10, 15, or 20 degrees while that of the nondominant eye is unsymmetric the patient must incline the head to a cor-

⁽³⁾ See "Torticollis and Spinal Curvature," American Medicine, March 26, 1904; "Malposition of the Head, etc., ibid., May 21, 1904; "Dextrality and Sinistrality," Popular Science Monthly, August, 1904, and "The Pathologic Results of Dextrocularity and Sinistrocularity," Ophthalmology, October, 1904; "The Optic and Ocular Factors in the Etiology of the Scoliosis of School Children," American Medicine, April 8, 1905; "Visual Function, etc.," Medical Record, April 22, 1965.

responding degree in order to see print or vertical handwriting plainty. He tilts the head to the right when that is required to bring his ocular axis to 90 or 180 and to the left when con versely that is required by the peculiar axis to bring it into all nment with the normal 90 or 180. The larger number tilt to the right because most of the young are hyperopic. (the astigmatisms of the eyes are generally at or near 90). and lastly, because, when variant from 90, the great majority of the right or dominant eve variants are at 75° or 80°. When the variation is further than 20° from 90°, the tilting would become too pronounced and impracticable, other morbid results then follow. In addition to or modification of this law I have lately discovered that head-tilting may be caused by another kind of unsymmetric astigmatism: if, for instance, the axis of the dominant eve is 55°, and that of the other is 105°. there is a partial neutralization of the asymmetry, but there is left a residuum of 10°, which will require a corresponding inclination of the head to the right to produce the effect upon the mind of a 90° axis of the dominant eve. This may be called the law of unsymmetric astigmatic averages in dominance. It is a corollary of the law of symmetric averages alluded to.

Astigmatisms that do not group themselves in any of the preceding classes exist, and can only be explained as individual variations produced by some cause differing usually from those in other cases, the result of some old inflammation, of injury, of heterophoria, amblyopia, or ametropic strain, etc.

The general reason for the slight differences in the tilting of the axes hardly needs mention. There is nothing absolutely symmetric in biologic structures. The eyes are never on the same level, or equidistant from the nose, the orbits never exactly alike, the insertions of the muscles never mathematically the same, the nasal bones vary in width, height, contour, etc.; when such variations are of a certain degree or peculiarity they modify the results of the constantly acting cause, or lid-pressure, and bring about small abnormalisms of astigmatism in numerous ways.

INTRAOCULAR INFECTION OF ENDOGENOUS OR METASTATIC ORIGIN *

By Dr. J. Terson (of Toulouse).

TRANSLATED FROM THE FRENCH BY DAVID DE BECK, M. D., SEATTLE, WASH.

The author and his father have observed a case of intraocular suppuration involving the entire posterior segment of the left eye, developing explosively in the midst of general symptoms which the family physician had regarded at first as the beginning of a typhoid fever. The case was as follows:

F. J., aet. 33; liveryman, of delicate health. No signs of tuberculosis, although his father had died of it. Mother well. He had suffered since ten years of age from recurrent otitis media purulenta, and this had resulted in a marked degree of deafness, more marked on the left side. He had never had fever or loss of appetite.

On Oct. 5, 1903, he received a kick from a horse on the left side of the abdomen. This caused violent pain, but after the application of leeches he returned to his work. After a week there developed very suddenly a feeling a malaise, chills, fever, slight headache, a distinct epistaxis, a little diarrhea, a gurgling in the right iliac fossa. These were thought to indicate the debut of a typhoid fever. Few days later (the thirteenth after the traumatism), the patient noticed a dullness of the left eye, with diminution of vision. The next day this had increased. On the second day after the physician detected a deposit of pus in the anterior chamber, with a reduction of vision to a vague perception of light. There was marked chemosis. On the seventh day there was free discharge of pus from the eye.

We then saw him (twenty-three days after the accident, and over a week after the onset of ocular symptoms). A fold of chemotic, almost phlegmonous, conjunctiva prevented the closure of the lids. We found two points of escaping pus from perforations through the sclerotic to the right and the left of the insertion of the superior rectus. The vitreous was of

^{*}La Clinique Ophtalmologique, June 10, 1905.

a yellowish tinge, except just behind the lens, which was still clear. Frequent antiseptic irrigations were kept up, but without preserving either the shape or the volume of the eyeball.

The patient was greatly weakened, but suffered relatively little pain. He gradually recovered as the eye atrophied; and four months later could wear an artificial eye without discomfort. A year later he had recovered his habitual health, and was working with his usual energy.

What is particularly striking in this case is the appearance of the intraocular infection thirteen days after an accident having its site on the *left side of the abdomen*, without the least contrusion or abrasion of the eye or its surroundings at the time of the accident.

We conclude this to be one of those infectious processes, isolated examples of which have been studied by various clinicians; and which a careful study has enabled us to group together, and to connect, at times with a general pre-existing infection, and at times with a primary localized infection situated at some point of the body widely removed from the eye. This secondary infection is most often the consequence of the dissimination in the blood of septic emboli.

It is essential that medical men bear in mind the extreme gravity of this secondary infection; for not only is vision rapidly lost, as well as the form and volume of the eyeball, but at the same time there is great danger of life from the migration of the infectious germs to the nervous centers, often causing the development of a fatal meningitis.

Notwithstanding their relative rarity, the number of reported cases of this sort is now sufficient to definitely establish their mode of evolution. This has led us to report this case (although it has certain obscure features); and to follow it with a study of the most important contribution on this interesting question of purulent intra-ocular infection of an endogenous or metastatic origin as contrasted with the cases of panophthalmitis of external origin.

The diagnosis, although presenting some points requiring exclusion, was hardly open to doubt.

The typhoid symptoms were only present at the onset, and the serum test proved negative.

The test of the bacilli by Prof. Rispal showed strepto- and staphylococci, but no tubercle bacilli; so that tubercular inflammation of the eyeball could be excluded.

The possible connection with purulent otitis media

chronica was considered, for such cases are reported [the elder Terson himself reporting one fatal case]. But the otitis had shown no change for the worse; it was carefully treated during the entire trouble, and it still shows a slight discharge. There were no cerebral symptoms, other than the slight initial headache. So this was confidently excluded.

From what source came the embolus that precipitated this secondary ocular infection, could only have been decided postmortem; and this was fortunately not possible here.

The treatment was purely expectant. Considering the hopeless character of the case, with a double perforation of the eyeball and profuse suppuration; one may question why an immediate resort to enucleation was not had. The danger of this operation, during active panophthalmitis, so generally held by many authorities, had its influence in restraining us. Pflueger maintains, however, that the meningitis that follows and proves fatal in these cases is not due to the operation per se, but is itself a result of the general infection; and that in such cases no ocular treatment can change the result.

A study of the literature shows quite a number of cases or references; usually with the typhoid-like general symptoms, and local symptoms identical with those in our case. Mackenzie was the first, over a half century ago, to give a masterly and complete clinical account of the affection under the name "phlebitic ophthalmitis." He states: "There is reason to believe that cases occur which are regarded as phlebitis after fever, but are really examples of a typhoid-like fever arising from phlebitis." He also quotes Todd: "I remember a case where ous showed in the anterior chamber. This case presented all the symptoms of typhoid fever. I was one day surprised at observing pus in the anterior chamber, which increased in quantity very rapidly, and pus was afterwards found in the elbow and shoulder joints. When we came to examine [post-mortem] this patient we found an ulcer in the heart at the base of one of the mitral valves."

Mackenzie divided the principal causes of secondary infection of the eye into the following four groups:

- 1. Inflammation of a distant vein, produced by a wound or by tying the vein, has been followed by the usual constitutional disturbance attendant on phlebitis, and amongst other secondary effects by disorganizing inflammation [infection] of the eye.
- 2. Suppurative inflammation of the uterine branches of the hypogastric veins in puerperal women, which, spreading to

the iliac and femoral veins, is apt to cause phlegmasia dolens. sometimes produces phlebitic ophthalmitis.

- Phlebitis produced in erysipelas, or diffuse cellular inflammation has been known to terminate in ophthalmitis.
- 4. Phlebitis occurring in consequence of febrile diseases. has ended in the same result

DeWecker and Fuchs give under the heading of chorioiditis purulenta metastatica a description resembling Mackenzie's. and indicate that the infection usually takes its point of origin in the chorioid

Berger speaks of this secondary intraocular infection under the heading: "Retinitis and chorioiditis sentica." It has been found in a certain number of cases that the retina is found on microscopical examination to be more involved than the chorioid. Panas mentions many causes, particularly gonorrheal rheumatism [so-called].

A. Terson has called it a "chorio-retino-hyalitis"—a term brief, but most comprehensive, but not so expressive as Berger's in conveying the idea of the endogenous origin.

Desbrieres, in his thesis, calls it a secondary infectious panophthalmia. This is not so exact, as in some cases (particularly noticeable in ours), the cornea remains clear.

Another thesis, that of Rancurel, is an excellent and most complete monograph covering the intraocular infections of puerperal origin. It contains an observation by A. Terson of a unilateral metastatic ophthalmia of puerperal origin. The eve atrophied: but the patient recovered after the discharge of an immense abscess of the thigh.

Axenfeld, in his two memoirs, has studied this question under every aspect; and although he has not discovered the real relation between the general and the ocular infection, he has presented with rare ability all the known facts, together with his personal observations.

To the classes established by Mackenzie: Septicemias of surgical and post-puerperal origin and those following infectious diseases, he has added another which he designates as "cryptogenetic pyemias" (i. e., those in which the port of entry is not discoverable). He has found among 27 cases a certain number of cases where a chilling has had a role in the genesis of the affection: less often an acute articular rheumatism (as we have ourselves observed in one case), once a meningitis. and once a miliary tuberculosis. He has established that the infection is most often caused by streptococci or staphylococci (as was true in our case) and more rarely by the pneumococcus. The infection shows thrombosis of the veins of the retina, the chorioid or the iris, where the infection is unilateral; and septic retinal emboli where the infection is bilateral. These emboli are sometimes granulations produced in a malignant endocarditis; sometimes the result of the propogation of the infection along the veins coming from the primitive focus; and sometimes of coaguli formed in the blood.

What is strikingly illustrated from the numerous facts is the infinitely greater gravity (from the point of danger to life) of the endogenous infection as compared to the panophthalmitis of external origin. Where the infection involves both eyes, in a third of the cases, death is almost inevitable (31 deaths out of 34 cases). In the remaining two-thirds of the cases, where the infections involved only one eye, death has resulted in one-third of these cases (i. e., in about 22 per cent. of all).

In the cases of irido-chorioiditis, described by Morax, in which there was yellowish discoloration of the vitreous, and where the primary infection was of gonococcic origin, recovery resulted. Similarly A. Terson has reported to me a case of ocular infection in an acute blennorrhagic metritis with gonococci in the vaginal pus, and we have ourselves observed three cases of irido-chorioiditis complicated with suppurative hyalitis in subjects with rheumatism of blennorrhagic origin, in which there was comparative recovery of the affected eyes. This shows that the suppurative intra-ocular infection of gonococcic origin is of less gravity. But the prognosis is fatal, as regards the eyeball, where the infection is due to the streptococcus, or the staphyloccoccus, or even the pneumococcus, although the latter is much more rare.

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ACCIDENT WITH ADRENALIN.

By David DeBeck, S. B., M. D.,

SEATTLE, WASHINGTON.

Any accidents, grave complications or unusual results following the employment of the newer or the little known remedies should be promptly reported. In this way we will the sooner definitely "place" a remedy in our materia. I am the more strongly led to report this observation at this time because it forms so good a companion to the abstract of the article by Bouchart on the same subject, given in this number among the "Abstracts of French Ophthalmic Literature" (pg. 586). The case was that of a married man, aged 37, with an ordinary, every day case of syphilitic iritis plastica in the left eye. The only complication was a broad posterior synechia involving nearly the lower-inner half of the pupil margin. The case was only seen at the end of the first week; and this synechia failed to break loose under the energetic use of atropin.

Otherwise the case progressed favorably. This synechia, however, kept a broad zone of angry congestion persisting below. His business engagements were such that he imagined the appearance of the eye told against him, and he came to my office on May 29 on his way to a very important meeting, begging me to do anything to improve his appearance. With this intention alone, I instilled a generous application of adrenalin (1-1000.) He went directly from my office to his engagement in a neighboring office building; and showing a very presentable blanched eye.

The next day he called me up by telephone early (Memorial Day) and I went down and saw him at the office about ten o'clock. I found a hemorrhage into the anterior chamber; the fluid part coming about half way up to the pupil, and a slight tinge of red to the entire aqueous. Vision was correspondingly abolished.

He stated that the eye had commenced to pain him about an hour after the drops were instilled and the sight had rapidly blurred.

The progress of the absorption was unusually favorable.

There was no further accession, and the original effusion had entirely disappeared in three or four days. There seemed to be no accompanying secondary injurious influence, for the eye progressed to recovery after the disappearance of the blood about as rapidly as it was doing before. Vision rose to the point at which it had stood before. Now, three weeks after, the eye is practically well.

The solution was of recent make, was of strength 1-10 00 of P. D. & Co.'s adrenalin, and the same solution had been used in several other cases with no unusual complications.

MEMORIAL VOLUME TO JULIUS HIRSCHBERG, ON THE TWENTY-FIFTH ANNIVERSARY OF HIS PROFESSORSHIP IN THE UNIVERSITY OF BERLIN*

Translated by Clarence Loeb, A. M., M. D.

ST LOUIS

1. BLEPHAROPLASTY BY THE MODIFIED ITALIAN METHOD (GRAEFE'S METHOD), BY PROF. DE LAPERSONNE, PARIS.

The author has treated with good success a case of high degree of cicatrical ectropion, by the formation of a lid by the old Italian method of rhinoplasty, known as Tagliacozzi's method, but also known as the German method, because it was so often used by K. F. Graefe, the father of our master. Modern surgery has greatly decreased the dangers of this method, and a complicated bandage-apparatus has considerably lessened the complaints of the patient during healing. Berger was the first to use this operation for blepharoplasty. The patient of the author is a young man, aged 22, with extensive cicatrices of the right side of the face, due to a burn which he suffered when 13 months old. The lids are entirely everted, the border of the upper lid being in the region of the evebrow. As a consequence of the inability to close the eve. a pamus and a keratitis had developed, with the gravest possibilities for the eye. Since the cicatrisized skin of the vicinity was unsuitable for flap formation, the author decided on this method. After the borders had been made movable and sewed together, there was placed in the large defect of the upper lid a pedicled flap of the same size from the forearm, and the arm fastened properly to the head. Twelve days later, the pedicle was cut. Healing progressed normally. Photographs show the method and the beautiful result.

2. DOUBLE, SYMMETRICAL XANTHOMA OF THE OCULAR CON-JUNCTIVAE, BY DR. VON DUYSE, PROFESSOR OF CLINICAL OPH-THALMOLOGY AT THE UNIVERSITY OF GAND.

Xanthoma or xanthelasma, so frequent on the lids, has never

^{*(}With 24 illustrations in the text and 10 plates), Leipsic. Veit & Co. Abstracted in The Centralblatt für practische Augenheilkunde, March, 1905.

been described as a tumor of the bulbar conjunctiva. The author has had the opportunity to examine several such tumors which had developed bilaterally and symmetrically on the ocular conjunctiva of a woman 41 years old, nasally and temporally, in the zone of the orifice. They were irregular in outline, slightly raised and of a reddish yellow color. It is noteworthy that xanthelasmata were to be found at the same time on the skin of the lids, breasts and shoulders.

The excised tumors all showed the same structure. They were covered with epithelium, which was rich in beaker cells, and which sent many acinoid processes into the underlying tissue. Masses of leucocytes were collected around the vessels. under the epithelium and near the epithelial downgrowths. The connective tissue stroma enclosed a granulated substance. rich in nuclei, which showed fat droplets, especially in the superficial layers. Under stronger magnification, this granulated substance is seen to consist of cells sprinkled with large masses of protoplasm, some of which were sharply demarked, while others seemed to run into each other. They have one or more round, oval or vesicular-shaped nuclei, which plainly show chromatin threads, a large nucleolus and karvolysis. These cells are the characteristic elements of the new formation, the xanthoma cells. In addition to these, there are giant cells with nuclei arranged in the form of a garland, and peripheral fat elements. In places, the fat is extracellular, between the fibres of the connective tissue.

The xanthoma cells consist of young endothelial cells that proliferate and hypertrophy.

In conclusion, the author speaks of similar tumors of the conjunctiva mentioned in the literature, as well as the presence and appearance of xanthelasma of the external skin.

- 3. TREATMENT OF CATARACT, TAKEN FROM A BOOK OF THE XV CENTURY BY MARCO SINZANOGIO DA SARANO, BY PROFESSOR GIUSEPPE ALBERTOTTI, MODENA.
- 4. Thrombosis of the Central Vein of the Retina, by Professor Dr. Elia Baquis, Privatdocent in the Ophthalmologic Clinic, Oculist to the Royal Hospital at Livorno.

The diagnosis of thrombosis venæ centralis retinæ by means of the ophthalmoscope is not free from doubts, and cases confirmed by a pathologico-anatomic examination are necessary.

A man, 60 years old, became suddenly blind in the left eye, and the opthalmoscope showed a great swelling of the vein, a narrowing of the artery, numerous hemorrhages along the

course of the vein; lateral iritis plastica, finally absolute glaucoma, demanding enucleation.

The eye, after it had been hardened in Mueller's fluid, was bisected through the equator and the nerve was cut off behind the lamina cribrosa. The nerve was cut in cross sections and seemed normal; the vein, however, had an unusual course. Near to the posterior pole it was narrow, left the nerve in an acute angle, ran for a short distance under the pial sheath, so that a bent course was plainly the cause of the stasis.

Near the lamina, the vein was obliterated by a recent thrombus composed of large clear cells with oval nuclei, although the artery accompanying it was not altered from its normal condition.

Anteriorly, the bulb showed a distinct adhesion of the periphery of the iris to the angle of the anterior chamber, causing a retention of lymph and glaucoma.

At the posterior pole, the retina was so altered by an edema that it seemed to have a triple thickness. In the second place, its vessels were affected, the arteries being narrowed or obliterated and the veins were entirely thrombosed. Furthermore, the entire retina was covered with hemorrhages of greater or less size. Additional changes were observed in the retinal cells; the ganglion cells and the nerve fibres had entirely disappeared, the inner nuclear layer was pale and thinned. Only the visual cells, and especialy their nuclei, the external granular layer, were hypertrophied instead of atrophied. The external nuclear layer was strewn with numerous karyokinetic nuclei. Furthermore, the migration of these cells through the membrana limitans externa into the internal section of the cones was interesting.

Furthermore, there is a new formed layer adhering to the membrana limitans interna composed of clear cells and embryonal vessels, which closely recall the retinitis proliferans of Manz

If these changes are viewed according to their arrangement and meaning, it will be found that the complicated details of the picture are due to thrombosis of the central vein.

In the first place, the thrombus was caused by the obstruction to the flow of blood, then there was stasis of the current, then dilatation of the walls and rupture, and finally numerous extensive hemorrhages throughout the entire retina.

The difficulty of resorption of the blood caused degenerative processes which led to new formation of connective tissue in the retina and to adhesion of the periphery of the iris and glau

It still remains to explain the cause of the thrombus. A phlebitic process can be excluded since there was no perivenous injection. It was rather a marantic process, since the pathologico-anatomic finding showed that there was a stasis in the arterial circulation. In the furtherest part of the opticus, the central artery is seen to be obliterated by a mars of hard connective tissue which is undoubtedly an endarteritic process.

There is, therefore, no doubt that the thrombus of the central vein was of marantic origin on account of the stasis of the blood in the vein which was caused by the previous narrowing of the beginning of the central artery in the nerve.

5. THE CAUSE OF THE INCREASE IN THE INTRAOCULAR TENSION IN TUMORS WITHIN THE BULB, BY A. BIRNBACHER, GRAZ.

The material examined was 7 cases of intraocular tumors which had shown distinct symptoms of increase of intraocular tension, and in which the tumors were not so far advanced. that a histological examination was fruitless. Five were cases of chorioidal sarcoma, one was a case of glioma of the retina, and one was a case of tuberculosis of the disc; to these was added by the author, as the eighth case, one which he and Professor Hirschberg had described in 1896 as a carcinoma of the posterior layer of the iris. In 7 cases the author could show that the passage to Schlemm's canal was prevented by the closure of the iris angle, in the majority of cases due to inflammation, but in a few cases due to extension of the tumor into the root of the iris or the anterior chamber. The author claims that this obstruction to the chief exit of the lymph stream is the cause of the increase in the intraocular tension. The cause of the obstruction is the distant action of the metabolic products of the tumor, which causes inflammation of the parts near which they had been for some time. The author seeks to support his findings by experiments such as introducing Koch's tuberculin into the vitreous of rabbits. He found that it produced a non-purulent inflammation of the iris and especially of the vitreous.

In one case, the author found a vortex vein completely filled by sarcomatous tissue. In this case he considered this to be the cause of the increase in tension.

The author sums up: the causes of the increase in intraocular tension are many. They are due to the prevention of the exit of the blood and lymph. This is usually to be sought in the obliteration of the iris-angle, but may be due to extension of the tumor into the veins.

6. The history of glass lenses, by Dr. Claude du Bois-Raymond.

The author describes three antique window glasses that he found in the Antiquarium of the Berlin Museum. They are right angled, 38 cm. long and 28 cm. broad. Since the middle are fully 3 cm. thick, while the four borders are only a few mm., they are convex lenses. The pieces come from the old Roman period, and show that at that time people could not only make glass but also that they could obtain optical effects thereby. Of course it is not to be believed that this was done purposely.

7. PRIMARY SARCOMA OF THE IRIS, BY DR. OSCAR FEHR, FIRST ASSISTANT AT GEH.-RATH HIRSCHBERG'S CLINIC.

Three of these rare cases have come into the Hirschberg's Clinic during its 34 years: One case to every 83,000 patients. and 4.2% of the operated uveal sarcomata. The first case was cured by iridectomy, for though the eye has been blind for more than 9 years, there has been no return and the patient is healthy. The second case was a return of a tumor that had been removed 2 years before by some one else, by iridectomy. The eye was enucleated. Four years have passed but no local return or general metastasis has been observed. In the third case all operation was refused. The 63-year-old woman was under observation for 13 years. Year after year the progress of the tumor which could be diagnosed without the microscope could be followed. Frequently hemorrhages from the tumor into the anterior chamber could be seen and lately there have often been symptoms of increase in tension. By its slow growth the tumor has in 13 years more than doubled its size.

The second part of the work deals with the treatment of sarcoma of the iris, whether every case should be enucleated, or whether an iridectomy is sufficient in some cases. The author regards the prognosis of iridectomy as more favorable than Casey A. Wood and Brown Posey did, for of the 32 cases in the literature, only 5 have suffered a recidive while 13 have been free for more than 3 years. Still the author advises enucleation and even warns against experimental iridectomy in advanced cases as dangerous, since to operate on a tumor that cannot be completely removed tends to cause it to spread, and in the second place the returning tumor, as the specimen of Case II shows in agreement with other findings,

utilizes the breach in Descemet's membrane to spread subconjunctivally.

8. MALIGNANT EPITHELIOMA OF THE CILIARY BODY IN A CHILD OF FIVE YEARS. (A CONTRIBUTION TO THE KNOWLEDCE OF THE EPITHELIAL GLIOMA INCLUSIONS) BY DR. R. KUTHE AND DR. S. GINSBERG, BERLIN.

In a child of 5 years that showed glaucomatous symptoms, there appeared in the anterior chamber of the right eve a grevish red tumor containing few vessels, that covered the external quadrant of the iris. By oblique illumination, it could be followed backwards, showing how in its growth it had detached the iris from its root. On section, it was seen that the temporal quadrant of the iris and the ciliary body were involved in a grevish white tumor. The histologic findings in the case, like which only two cases are found in literature. were reported in the February, 1904, part of the Centralblatt. in the report of the Berlin Ophthalmologic Society of May 14. 1903. It is to be noted that the tumor is purely epithelial. Its elements are for the most part cylindrical cells; the epithelial cells are arranged in one or more lavers, and show a distinct tendency towards superficial extension and formation of membranes. This membrane-like layer of cells, with its numerous folds and protrusions govern the structure of the tumor.

The membrane agrees with the wall of the embryonal optic vesicle. Here as there, is found a many layered epithelium with simple or double clear borders, in which there is a superficial arrangement of the mitoses on the side away from the base. This shows the embryonic character of the tumor.

In a very complete final chapter, Ginsberg speaks of the presence of epithelial forms in the gliomata of the retina, brain and cord, in regard to whose meaning there is as yet no unanimity. The presentation of the present status of the question as well as the results of his own frequent investigations of this problem will contribute to the clearing up of the subject.

9. The relation of the size of the image to the intensity of the source of the illumination, in central vision, by Dr. Loeser, Berlin.

The investigations of the author tend to confirm Ricco's law that the product of the size of the image on the retina and the intensity of the light is a constant.

10. RETINAL HEMORRHAGES IN MENINGITIS SYPHILITICA, BY DR. FRITZ MENDEL, BERLIN.

In a case of severe meningitis syphilitica hemorrhagica there were bilateral choked disc and hemorrhages into the retina-

The energetic mercury cure not only cured the fundamental disease but also gave to the eye completely normal vision.

11. CONTRIBUTION TO THE PATHOLOGY OF THE CERVICAL SYMPATHETIC, BY DR. KURT MENDEL, NEUROLOGIST, BERLIN.

In a woman of 53, the author observed a paralysis of the left cervical sympathetic, with all the symptoms found experimentally in animals. The left eve showed miosis, narrow orifice, enophthalmus, and a clearer color of the iris, which the patient herself had observed as a new lesion. After atropinizing both eves, the left pupil remained about 34 mm. narrower than the right, a phenomenon that speaks for the view that atropin mydriasis is due not only to paralysis of the oculomotorius, but that the maximal dilatation is caused by irritation of the fibres of the sympathetic in the dilator pupillæ. Although the left side of the face is as a whole warmer and redder than the right, injection of pilocarpin give the secretion of sweat only on the right side, proving the existence of a sweat center in the cord whose path is interrupted. In the same way, the right side of the face became more red after bodily exertion than the left. The cause of the affection of the cervical sympathetic is a bony struma.

12. From the General Hospital in Eger, by Dr. Chr. Merz-Weigandt, Ophthalmologist in Eger, Bohemia.

a—A rare pannus-like affection of the cornea.

In a woman of 42 years, there was on both eyes inflammation with an annular, grooved formation occupying the entire periphery, whose further progress was always preceded by small superficial infiltrations of the cornea. Cauterization had no effect. Removal cured it.

b—An injury to the cornea caused by sulphur dioxid.

A brewer got some drops of sulphur dioxid in his left eye. One half hour later there was photophobia, redness, slight chemosis; the cornea was aparently dry and smoky greyish discolored in toto, and completely anesthetic. In the smoky grey discoloration were two cloudy spots the size of head of a pin. The cornea in 4 days was completely clear, the sensitiveness returned and the irritation disappeared. Experiments on the eyes of rabbits gave the same picture.

c—Two gun-shot wounds.

1. A 15-year-old-girl was hit with a revolver shot, through the carelessness of her father. Entrance of the ball was in the glabella, the bone was uninjured; the path led between bone and periosteum beneath the incisura supraorb. in a semicircular way around the upper porder of the orbit backwards into the right orbit, and from there through a hole in the sclera into the bulb, inside of which the 7 mm. ball was found after enucleation.

- 2. In a 12-year-old-boy, a piece of a cartridge 58 mm. long had penetrated through the middle of the ball, into the orbit.
- 13. A CASE OF SCLERODERMIA OF THE LIDS, BY DR. WM. MUEHSAM, BERLIN, ASSISTANT IN GEH.-RATH HIRSCHBERG'S EYE CLINIC.

The case was one of a woman 32 years old where it happened that only the lids and no other part of the body was affected.

14. THE DEMONSTRATION OF THE NEUROGLIA AND THE AXIS-CYLINDERS IN THE OPTIC NERVE, BY DR. ALFRED MOLL, BERLIN,

This method which gives an elective or contrast strain to the neuroglia, has the advantage of its great simplicity over all the older methods. The material does not need to be prepared beforehand for a specific neuroglia staining, and the specimen can be prepared in a short time.

15. A CASE OF DERMOID CYST OF THE ORBIT WITH NUMEROUS MAST CELLS, BY DR. MAX PESCHEL, FRANKFURT, A. M.

In a 14-year-old child of blood related parents, the author extirpated a congenital dermoid cyst of the upper part of the right orbit. It had increased considerably since puberty, causing dislocation of the ball downwards and ptosis. tirpation of the cyst, which extended as far as the fissura orbitalis superior was rendered more difficult on account of its adhesion to the periosteum, but it was removed in toto. It was 3½ cm. long, and its wall was in places very thick, the thickest part measuring 7 mm. This enormous thickening of the wall was caused by the formation of lymphangiocavernosous tissue: it is the most important characteristic of the cyst. Furthermore, to be noted is the enormous number of mast cells, many thousands of which are found in groups or rows in the cyst. The author utilizes the opportunity to study the mast cells, especially their development. The very thorough description of their histology as well as the conclusions cannot be described in an abstract. They must be read in the original, which is furnished with numerous drawings.

16. The prognosis of ocular traumata by blunt force, with especial attention to injuries by bovines, by Dr. Otmar Purtscher, Klagenfurt.

On the basis of 74 cases observed and treated by himself, the author discusses the prognosis of injuries to the eyes by blunt force, both in regard to the retention of vision of the injured eye, as well as the danger to the other from sympathetic ophthalmia. The cases are described in three tables. Table 1 contains 26 cases of rupture of the sclera by blow from the horn of a cow; table 2 contains 36 cases of rupture from other blunt force, and table 3 contains 12 cases of injury by the horn of a cow without rupture of the sclera.

In the cases of both of the first groups, about two-thirds obtained useful vision. In 11 cases, enucleation was done or recommended. Sympathetic ophthalmia was never observed. Of the cases in table 3 about one-half had paralysis of muscles

The author draws the following conclusions: Smashing of the ball demands immediate enucleation. Cases of rupture of the sclera, in case the loss of vitreous is not too large and perception of light is still retained, allow a good prognosis and do not demand immediate enucleation.

Subconjunctival ruptures are on the whole the most favorable.

If the lens is dislocated under the conjunctiva, it must be removed.

The typical ruptures, following Schlemm's canal, allow a better prognosis than those situated further back.

Staphylomata do not cause an absolutely unfavorable prognosis.

All cases of rupture of the ball may undergo endogenous infection, especially from the nose.

17. THE DIAGNOSTIC SIGNIFICANCE OF ACQUIRED VIOLET BLINDNESS, BY DR. RICHARD SIMON.

The true acquired violet blindness, tritanopsia, is to be distinguished from violet blindness from absorption. It is a valuable but little used diagnostic help in recognizing diseases of the retina. When true violet blindness is present, red and green are correctly named, while blue is called green or bluishgreen, and yellow is called whitish or reddish; if the latter color is called correctly, there is absorption. Besides ablatio retinæ, retinitis albuminurica is the disease which most frequently causes tritanopsia. Frequently, however, there is a diabetic or specific retinitis. The communication of instructive cases illustrates the diagnostic value of this symptom.

18. THE FREQUENCY AND CURABILITY OF SYMPATHETIC OPHTHALMIA, BY DR. KURT STEINDORFF.

Among the 125,000 cases treated clinically in Hirschberg's clinic from Nov. 1, 1869, to Oct. 5, 1904, 42 cases were observed with undoubted sympathetic ophthalmia, (0.33% of all

cases). In 30 cases, a perforating injury was the cause of the trouble, in the rest the cause was perforating ulcer of the cornea, metastatic ophthalmia, intraocular tumor, etc. The disease was found in 12 women and 30 men. They were more numerous in the first decade of life. 14 in number (11 injuries). As the children made no complaint the physician was astonished by the outbreak of the condition in spite of careful treatment. Therefore, every ball which is in any way suspicious, in case the vision is very slight, is to be removed. Hirschberg has removed over 400 balls after perforating wound of the eve and has never seen a case of sympathic ophthalmia after the enucleation. The reduction in the morbidity is caused also by the preventive enucleation. period 1869-1874, 4.6% of perforating injuries received into the clinic suffered sympathetic ophthalmias, while in 1900 and 1904 only 1.6. The sympathetic ophthalmias were 3 times as frequent 35 years ago as they are now: the morbidity has continually sunk. Enucleation has not been without benefit for the sympathizing eye. Operations such as neurotomy and neurectomy are not necessary. (The fact, which the author has shown, that the number of cases seen in Hirschberg's clinic has decreased since 1889 is probably caused by the appointment of corporations' physicians).

Not only prophylaxis but also treatment has achieved great results lately. The course has become much more favorable, the frequency of healing has increased since operation has been limited to the absolutely necessary cases and postponed to a period of intermission. An eve that has remained free from irritation for 26 years is never operated upon. Furthermore, a serous iridocyclitis sympathetica is less malignant than a plastic one. General and local treatment, in addition to operation, are very important for a favorable course. The author considers an eye healed if it has remained free from irritation for 2 years after its last inflammation, and its vision has not declined. Ten of the 42 cases are still under observation and have been for at least 3 years. All came fresh to the clinic and the vision in 2 cases is 1/5; in 3, 1/4; in 2, 1, and in 1 it is 5/4; i. e., 23.8% of permanent cures (Schirmer gives 14%). When the eves are examined by the ophthalmoscope, the chorioidal changes are always found. The 15 cases seen in the last 15 years where the vision was present and the eves not phthisic, were all saved from blindness. Of the patients with fresh sympathetic ophthalmia, 60.7% have a vision of more than 1/10. The so-called interval is without effect on the course of the disease

19. Anatomical investigations of retinitis proliferans, by Professor Giuseppe Cirincione, Director of the University Eye Clinic at Genoa.

The author has enriched ophthalmic literature by an exact histologic examination of a case of retinitis proliferans. This and earlier findings have brought him to the following conclusions: the characteristic ophthalmic picture is caused by new-formed fibrous tissue which penetrates the inner superficial layer of the retina and projects into the vitreous. It developes by predilection at the optic nerve and in the region of the central vessels. The new-formed tissue is infraretinal. affects the layers of the nerve fibres and the ganglion cells, and is covered by the internal limiting membrane. The retinal vessels are highly sclerosed. In the altered retina are found numerous new-formed blood vessels The retina shows a high degree of hypertrophy of the supporting fibres, proliferation of the neurilemmata and atrophy of the nervous elements. a so-called gliosis retinæ. The chorioidea shows only minimal changes of an atrophic nature. Hemorrhages and glaucoma are secondary symptoms. Retinitis proliferans is a purely local disease. The etiology is in all probability to be sought in the presence in the vitreous of irritating substances which act especially on the adventitia of vessels. The name retinitis proliferans is considered correct.

20. Injuries to eyes of children at birth, by Dr. Bruno Wolff. Gynecologist at Berlin.

This work is to be greeted as a worthy contribution to ophthalmic literature, since for the first time, this weighty subject has been considered from the gynecologic standpoint. The author reports 4 cases of injuries to the eyes of new-born children in 581 cases with narrow pelves in the obstetrical clinic at the Charite. Then follows a complete tabulation of the discussion of injuries to the eyes of the new-born, found in the literature, with an exact consideration of the reported course of the birth. The mild injuries to the eyes consist in retinal hemorrhages, which the author regards as consequences of the asphyxia and analogous to the ecchymoses found in other organs as a result of asphyxia, also in hyperemia and swelling of the conjunctiva. As birth-injuries in the narrower sense, he found fracture of the orbit, injury of the neighboring soft parts, protrusion or extrusion of the ball, exophthalmus, paralysis of the ocular muscles, crushing of the ball,

clouding of the cornea, hemorrhage into the anterior chamber, rupture of the chorioid, atrophia nervi optici, infantile glaucoma, traumatic cataract, panophthalmitis, phthisis bulbi, and microphthalmus. Injuries were almost never seen in children born with the head following. In the vast majority of cases, they happened in forceps delivery, i. e., in narrow pelves. They were especially numerous when the operation was very difficult on account of the head being high.

In conclusion, the author discusses certain questions of practical value in obstetrics.

ABSTRACTS FROM ANGLO-AMERICAN OPHTHALMIC LITERATURE

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WASHINGTON.

Gross Appearances of the Tissues of the Iris in Epilepsy.

OLIVER, C. A. and KNIPE, J. C.. Philadelphia, (Ophthalmoscope, May, 1905), after a very careful examination of the irides of 60 subjects of epilepsy in the wards of the Philadelphia Hospital, January, February and March, 1904, tabulate their findings as follows: First, that the pupils, like those of normal individuals were oval or ovoid with the angles of their axis placed slightly downward and outward. Second, the pupils, as a rule, were unequal in size, that of the left being generally the larger. Third, the pupillary rims of the pupillary zones presented an unusual degree of uveal pigment fringing. Fourth, the muscle areas of the pupillary zones were, as a whole, rather deeply tinted, and the composite fibers

appeared to be slightly thickened. Fifth, the divisional minor circles were not distinctly outlined, their interlacings and crypts in most instances not being sharply and clearly defined. Sixth, the radial fibers of the ciliary zone were plainly marked and outlined, although the intervening minute depressions were blurred and indistinct in some places. Seventh, the concentric contraction grooves in the ciliary zones were abruptly broken in places, with a lessening of the indentation depths, and an undue broadening and elevation of the corresponding furrow ridges. Eighth, the vascular spots and pigment aggregations ordinarily seen in the ciliary zone were probably increased in number and size. Ninth, the peripheral pigment in the generally invisible ciliary zone, was sufficiently broadened in some situations in some of the cases that it could be seen under oblique illumination.

Keratitis Disciformis.

Posey, W. C., Philadelphia, (Ophthalmic Review, May, 1905), contributes to the literature of this disease the history of a case occurring in a Polish laborer, forty years of age. The inflammation in the left eye was said to have followed an injury and persisted notwithstanding active treatment. The right eve became affected one month after the left, and its condition was attributed to particles of dust and splashes of sulphur water which came in contact with the organ while at work. The appearance of the eves at the time of examination, was very similar to the figures illustrating keratitis disciformis in Fuchs's "Text-book on Diseases of the Eve." The pupillary areas of both corneas were the seat of gravish-white opacities of a somewhat oval form, which were sharply defined from the clear corneal tissue surrounding it by a gravish border which was rather denser than the rest of the opacity. Under the magnification of a corneal loupe, the epithelium over the opacity was found to be roughened but unbroken, and the opacities which extended posteriorly into the substantia propria resolved themselves into a number of small gravish dots. The center of the opacity was rather denser than the surrounding area. The eyes were perfectly quiet and there was no trace of vessels either upon the opacities or at the limbus of the cornea. The opacity in the left eye was more irregular than the right, and in its lower portion possessed more of the appearance of an ordinary corneal macula; this was in all probability due to its having been previously cauterized. With the pupils dilated with atropin, vision in the right eye equalled 5/15 and in the left 5/60. Subconjunctival saline injections, local applications of a 5 per cent solution of iodin, and massage with yellow oxid of mercury were employed, but the patient tiring of the confinement to the hospital, passed out of the observation of the author. The report is replete with references to other cases and the views of other authorities on this subject.

S. H. B.

Unilateral Proptosis and Edema of the Lids(?), (Thrombosis of the Lateral Sinus), Occurring in the Course of Scarlatina.

WERNER, LOUIS (Ophthalmoscope, May, 1905), gives the history of a case presenting, in brief, the features mentioned in the above title. The patient, a boy aged six years, after two days of malaise developed a mild atttack of scarlatina. with only slight affection of the throat. He made very good progress up until the ninth day, when the temperature which had been normal for two days, rose to 101.4° F, and he became heavy and drowsy. The evelids of the right eve were swollen and red and the eye itself became prominent. There was no congestion of the conjunctiva. The temperature returned to normal in a few days, but the eve symptoms persisted although to some extent improved. On examination at this time, there was a bluish-red blush over the upper lid only: both lids were swollen and edematous, more especially the upper one. The swelling was not tense or indurated, and the boy was able to keep the eye open. No enlarged veins were visible, but the lower lid was slightly blueish. The exophthalmos was very evident; cornea clear, pupil normal in size and reaction. There was no impairment of mobility beyond what might be expected as the result of the protrusion. Pain and tenderness were absent. When examined ophthalmoscopically a few days later, the fundus was normal. The local treatment consisted of warm fomentations of boric lotion with a mild astringent. For several weeks after recovery from the scarlatina, a slight degree of swelling of the lids occurred at variable intervals. It then disappeared but the proptosis persisted for two months. The exophthalmos eventually disappeared. This author notes the rarity of ocular complications in scarlatina and gives references to the previously recorded cases. S. H. R.

Five Cases of Family Degeneration of the Cornea.

DOYNE, R. W. and STEPHENSON, S., (Ophthalmoscope, May, 1905), record five cases of family degeneration of the

cornea, giving a full clinical history and an illustration of each case. In commenting upon this series, they remark that this family presented in three generations, seven instances of a slowly progressive and bilateral degeneration of the cornea. leading to the serious impairment of sight after lasting several years. As a rule, the condition was not accompanied by very prominent symptoms of inflammation. Such as were present in two of the cases were probably the expression of tiny erosions of the corneal epithelium rendered particularly vulnerable by degenerative changes. The ages of the 5 patients examined—12, 15, 22, 24 and 28 respectively—allow one to study the different stages in the evolution of a very singular malady. In no instance was any evidence of syphilis forthcoming. Indeed to evoke syphilis as a cause would be to imply what has never yet been scientifically proved. viz., the transmission of that disease to the third generation. Two of the patients belonging to the third generation looked unhealthy but the thyroid gland, the state of which was investigated in every case, showed no obvious changes. No consanguinity of parents existed, either in the first or second generation. These authors review the histories of the cases previously reported giving references. They suggest that the conditions known as "nodular keratitis" and "lattice-like keratitis" be included under the general term "family degeneration of the cornea." S. H.B.

The Neuritic Form of Albuminuric Retinitis.

BALLANTYNE, A. J., Glasgow, (The Ophthalmoscope, April, 1905), in a clinical report on a case of this character remarks a few points which seem to support the view that the condition is primarily an edema of the papilla and nerve and not an inflammation: (1) The preponderance of the edematous distension, and the comparative insignificance of the cellular infiltration of the papilla and trunk of the nerve. (2) The manner in which the swelling is seen, both ophthalmoscopically and microscopically, to be limited to the actual nerve-head. (3) The retention of good vision. (4) The apparent tendency of the swelling of the disk to diminish when free diuresis was established, relieving the mental symptoms, and presumably causing diminution of intracranial pressue. It is to be noted that cases presenting this ophthalmoscopic picture, have usually shown an exaggeration of mental or cerebral symptoms. thus exhibiting a group of symptoms suggestive of intracranial tumor. One is tempted to think that the edema of the nerve may have its origin in a rise of intracranial pressure, due, perhaps, to excess of fluid in the lateral ventricles of the brain. In the case reported, such improvement as resulted from the onset of diuresis might be attributed directly to relief of such excess pressure. It certainly was due to no improvement in the general health of the patient, who died three days later with no new development of pressure signs.

Renal Retinitis in a Child of Six-and-a-half Years, with interstitial Nephritis.

HOBHOUSE, EDMUND (The Ophthalmoscope, April, 1905), gives a report of a case of retinitis occurring in a child six and a half years of age, who at the age of three years had had an illness that resembled scarlet fever. Four months prior to coming under Hobhouse's observation she was sick in school and had suffered since from headache and sickness, occasionally. The child was the subject of convulsions when first seen by the writer. The urine was examined frequently and showed evidences of interstitial nephritis. Examination of the eyes showed the presence of renal retinitis. The child gradually became exhausted and died from simple asthenia about two months from her admission to the hospital and the date when the renal retinitis was commencing.

Albuminuric Retinitis in a Case of Parenchymatous Nephritis in a Child.

CARPENTER, GEORGE, (The Ophthalmoscope, April, 1905), in a recent paper having the above title, states that he has seen and read of cases of neuro-retinitis arising in chronic interstitial nephritis in children and there is no reason to suppose that the complication occurs more or less frequently than in adults suffering from this variety of renal disease. Chronic interstitial nephritis in children is a rare affection, but by no means so rare as is commonly supposed. He is not aware that neuro-retinitis has been recorded as arising in association with "large white" kidney in children, although the fact that such is not mentioned in literature is due rather to want of observation than to a knowledge of fundus changes in the young in this condition. The case he reports was that of a girl 10 years of age who complained of sickness, headache, and pain in the stomach and whose urine showed evidences of parenchymatous nephritis. The history does not state whether or not the kidnev condition followed one of the infectious fevers. It was also discovered that the patient had neuro-retinitis of both eyes. The left optic disk was swollen and enlarged. The ves-

sels were partially buried in exudation, they bent as they crossed the edge of the disk, and beyond it they were partially obscured by a whitish haze. Just below the optic disk was a small hemorrhage. Radiating from the edge of the disk to the macula was an irregular-shaped area of paper-whiteness underlying the retinal vessels. It had a defined edge and somewhat striated appearance. At the macula, in addition, were a number of minute vellowish-white dots. Above the paperwhite area were a large number of small vellowishwhite, well-defined spots of varying size underlying the retinal vessels. The right optic disk was in much the same condition as the left, showing vessels partially buried in exudation and small hemorrhages. At the macula and between it and the margin of the optic disk, radiating fanwise towards it, were a number of paper-white patches underlying the retinal vessels. At the macula, some were well-defined, others were not so. Between the macula and the disk, the patches were well-defined and finally became merged in the haze of the disk. The vessels on the yellow-spot side presented along their course a number of patches of various shapes, small in size, below the retinal vessels, yellowish white in colors and defined. The nephritic condition progressed rapidly and the patient SHR died.

Retinitis Punctata Albescens.

PASCHEFF, C., Bulgaria, (Ophthalmic Review, March, 1905), adds to the literature of this very unusual condition the clinical histories of two cases. These cases, he states. come to affirm once more the existence of retinitis punctata albescens as a separate disease of the retina, just as Fuchs has described it in its principal features. That which distinguishes his first case from others previously reported is the etiology —the leues. In regard to the pathological anatomy of this form of retinitis, Pascheff says, we know nothing positive. He refers to Gavet and Fuchs who localize the alterations in the pigmented retinal epithelium which disappears in the region of the spots. In this way they consider them as of atrophic nature and identify the disease with retinitis pigmentosa. Another hypothesis, is that which admits of the external retinal layers, which view is upheld by the microscopic studies of Wedl and Bock who consider the condition to be nothing else but an edema of the retina. Pascheff is more inclined to accept a congenital atrophic process of the pigmented retinal epithelium, than a fresh inflammatory process.

Ocular Palsy with Marked Monocular Amblyopia.

COLLINS, W. I., London, (The Ophthalmoscope, March. 1905), reports a very interesting condition from the Northwest London Hospital, occurring in a boy, 14 years of age, following injury of the right eve with a pitchfork. Outside of a minute wound of the conjunctiva near the inner canthus and a little extravasation of blood around this spot there was no evidence of any penetration wound. Examination revealed palsy of the levator palpebræ, superior rectus, and sphincter pupillæ, with marked monocular amblyopia which persisted for several days and terminated in recovery. No treatment beyond rest in bed and an aperient dose of mercury and chalk was ordered. In discusing this case, Collins says we are left to assume that the trauma occasioned some "molecular" changes in the optic nerve, the ciliary nerves or muscle, and the levator and rectus superior muscles or their nerve supplies, which abolished temporally their respective functions. SHB.

Ethyl Chlorid in Ophthalmic Surgery.

HIRD, BEATSON, (The Ophthalmoscope, March, 1905), states that at the Birmingham and Midland Counties Eye Hospital ethyl chlorid has been used as a general anesthetic chiefly, during the last two years, and has largely taken the place of gas and to some extent, that of chloroform. During the year, 1903, it was administered on sixty occasions as a general anesthetic, mostly to children. The following were the operations for which it was given:

For cauterizing corneal ulcers21	times
For abscesses of the eyelids and tear passages19	46
For removal of tarsal tumors 7	
For internal tenotomy in strabismus 6	"
For probing the lacrymal duct	"
For removal of sebaceous cysts 2	"
For division of the canaliculus 2	"

During the year, 1904, the administrations of ethyl chlorid were ninety-one, or 50 per cent increase on the previous year. It was given for the following operations:

For cauterizing corneal ulcers26	times
For abscesses of the eyelids and tear passages 9	"
For removal of tarsal tumors10	
For internal tenotomy in strabismus23	
For probing the lacrymal duct	

For washing out the lacrymal sac	2	"
For examination of the eye	2	44
For removal of a foreign body	1	"
For excision of the eye	occa	asions
For evisceration of the eye	occa	asions
For needling (children)		. twice
For iridectomy (child)		.once

Hird anticipates that ethyl chlorid will now entirely replace gas and that its use will steadily increase. As a general anesthetic he has administered it on over one hundred occasions for short operations in eye and general surgery and with but one exception he has never experienced any difficulties. In this instance, the patient was a male, 67 years of age, and was admitted to the hospital for incision of a swelling of the neck which was diagnosed as a malignant growth of the jaw with breaking down glands. The heart-sounds were distinct but feeble. The breath-sounds were harsh, expiration was prolonged, and some ronchi were present. urine was of low specific gravity and contained a little albumin. When the incision was made the patient ceased breathing. With artificial respiration and withdrawal of the anesthetic the breathing was again established. Without gaining sciousness, he began to struggle which lasted about 3 utes, when he became markedly cyanosed and stopped breathing. Artificial respiration, strychnine, and tracheotomy were resorted to but without success. The termination was fatal, S. H. B. due directly to the anesthetic.

Ambiyopla Due to Methyl Alcohol.

STERLING, J. W., Montreal, (Ophthalmic Review, February, 1905), in a recent contribution reviews the principal ocular phenomena of methyl alcohol intoxication and gives the report of an additional case. This patient complained of marked diminution in vision which had come on suddenly after a severe drinking bout. Forty-eight hours later. he found on awakening from a deep sleep that he was totally blind and remained so for thirty-six hours after which vision began to return. This improvement became stationary after a period of six months. Vision remained R. E. 1/20; L. E. 1/10. The fields were contracted in the characteristic manner. There was total color blindness.

Transillumination of the Scienotic.

· SWANZY, H. R., Dublin, (Ophthalmic Review, February, 1905), believes that transillumination of the sclerotic as a

means of diagnosis for intraocular tumors, is entitled to more consideration than it is accorded. He describes an instrument designed by Leber, which consists essentially of a small electric lamp enclosed in a metal capsule. The anterior end of the lamp is in contact with a short glass rod which is covered with a hard rubber jacket. The lamp requires a current of not more than 8 to 10 volts. When the current has been switched on, the light of the lamp is transmitted along the glass rod, and the exposed end of the latter is then placed on the sclerotic of the cocainized eve. If the eve be normal, or even if a ripe cataract be present, the lights show the familiar red glow from the chorioid. But should an intraocular new growth be present, internal to the spot on which the glass rod is applied, the pupil does not light up—it remains dark. The glass rod becomes gradually warmer until it is too hot to be borne by the eye, but there is usually ample time before that to complete a clinical examination. Three cases are cited in which this procedure was of value. S. H. B.

The Electro-Magnet in Ophthalmic Surgery.

SNEIL, SIMEON, Sheffield, (The Ophthalmoscope. February, 1905), reviews the employment of the electromagnet from the time of its earliest introduction in ophthalmic surgery and compares the apparatus employed by him with that in use by others. He also describes how the magnet may be used in uncommon cases of foreign body in the eve. In exceptional cases only is the magnet of service for the removal of metallic splinters in the cornea and among these he mentions those deeply embedded nearer the posterior than the anterior surface of the cornea. Attempts at removal by the ordinary methods will end in opening the anterior chamber and, possibly, the passage of the foreign body inwards. Such cases, however, can be treated successfully by passing a keratome through the cornea and using it as a background on which to work with a needle or spatula until the foreign body is exposed and it is then that the point of the magnet will more readily remove the splinter than by other means. From the anterior chamber and iris the electromagnet will enable splinters to be removed, frequently with complete preservation of vision. The original wound may need to be enlarged or reopened, or a fresh corneal incision may be necessary. A portion of iris, if the splinter is entangled, may also require excision. In these cases, he states, the electromagnet often

renders excellent service in diagnosis, for if the magnet be applied to the cornea with a short, thick end, the nature of a foreign body is disclosed by its movement. This refers also to splinters in or on the lens capsule. By citing the histories of several cases, Snell shows that the magnet is of great aid in making the diagnosis. A further advantage is also illustrated, viz., that of guiding in some instances, by the electromagnet, a splinter from one part to another, and then, on the withdrawal of the magnet allowing it to drop on the iris again at a situation more suitable for its extraction. He states that the majority of cases, as well as the most serious, that require the aid of the electromagnet are those in which foreign bodies are situated in the posterior part of the eyeball.

In many the nature of the injuries, size and situation of the wounds, are such that, apart from the location of the foreign body, the prospect of recovery of sight is very little. The eveball, again, may have become seriously disorganized, and past recovery, before an opportunity for operation is afforded. Fortunately, however, in others the extraction of the splinter results in securing good vision. When dealing with foreign bodies in the posterior part of the globe the route by which the magnet is to be introduced into the eye is important. In a recent case with unclosed wound in the sclerotic this will usually be selected, even if the original wound needs enlarging. There are instances also when the wound of entrance has closed that it will still be the wisest plan to enter the magnet through the sclerotic when the lens is uninjured. It is a matter then, of importance, as to the best way of incising the sclerotic for the passage of the point of the magnet. The exact situation must, of course, be determined for each individual case, but care, in all, must be taken to avoid the ciliary region. Experience has taught him that the best procedure is to separate the conjunctiva for some little distance from the site of scleral puncture, and then after bleeding has ceased to introduce the knife in such a way as to make the incision in a line from the cornea to the equator. After the removal of the foreign body the closure of the separated conjunctiva by sutures will bring into close opposition the edges of the deeper sclerotic wound. The localization of the fragment, he further remarks, when practicable, is most important, and the visual results are likely to be much better than in those cases, in which the magnet is used where, although a foreign body be in the eye, its exact position has not been determined.

The Correct Use of the Giant Magnet.

HAAB, O., Zurich, (The Obhthalmoscope, February, 1905). in a discourse on this subject, first defines the proper construction of a magnet for ophthalmic purposes. It is evident. he says, that for work of this character the magnetic power of the instrument ought to be concentrated on a spot which is as convenient as possible for drawing out the foreign body. This concentration is needed in order to guide the foreign body by force along the path it has to take from the vitreous. chamber through the anterior chamber and cornea, and in order to avoid drawing into the ciliary body. But the longer the end, the more its magnetic power decreases. Any foreign body lodged in the retina or in any other part of the eve should be loosened by attracting it in jerks, for which purpose the instrument should be so constructed as to permit the operator, himself, closing and opening the current with the utmost facility. Haab has added a switch at the lower end of the apparatus which may readily be manipulated with the foot. The instrument is naturally insufficiently movable, but the patient's head is always movable, particularly, when the patient is sitting on a revolving chair, which position is preferred by this author. Large pieces of steel being more vigorously attracted by the magnet it is advisable, in these cases, to diminish the strength of the magnet either by inserting resistance into the current or by withdrawing the injured eve to a greater distance from the instrument, the latter being the more convenient. The force of the attraction can also be diminished by giving a longer point to the magnet or by means of W. Lang's cable.

In speaking of the use of the magnet he refers to a previous statement of his, that the intruding substance, on being attracted forward, does not follow the way of entrance but the lines of power of the magnet. Hence, it slides almost regularly around the lens, and appears somewhere behind the iris. Iridectomy is superfluous, in his opinion, when the magnet is properly used. The ciliary body should be avoided. This requires the surgeon to constantly watch the eye exposed to the magnet and to have the tip of the magnet opposite the right point in the eye. The pointed end of the magnet must stand out sufficiently from the coil to afford the surgeon a free survey of the field of operation. Haab further states that, as a speedy extraction of the foreign body is most important, it is not advisable to lose time

in examining the eye by the x-ray and the magnet needle. This, it is but fair to remark in passing, is not in accord with the views of many other authorities. He says, in the majority of cases we need not trouble about the resting place of the foreign body, although it is most important to look for the wound of entrance, and to make out its size, this notifying the size of the particle. The path taken by the foreign body should also be studied.

This author also states that the greater number of iron particles enter the eye through the cornea and the scleral border, and in one-half of his two hundred cases. the lens was injured. In all cases in which the lens is clear he advises examination by means of the ophthalmoscope. Preparation of the eve by atropin, cocain, and if necessary adrenalin, is important as an enlarged pupil aids materially when withdrawing the foreign body into the anterior chamber. In the majority of cases, the best way back for the foreign body is through the anterior chamber and in all these cases the patient's eve should, as a rule, be brought in such a position with regard to the magnet that its point is opposite the middle of the cornea to prevent as far as possible, the foreign body from becoming entangled in the ciliary region. When the foreign body is small the cornea must nearly touch the magnet terminal and the current should be closed in its full strength at once. If a large particle is suspected the patient's head may remain at a certain distance from the instrument. The article concludes with details of technic in simple and complicated cases and is well worthy of careful perusal. S. H. B.

Magnet Operations.

HIRSCHBERG, J., Berlin, (Ophthalmoscope, February, 1905), in a recent article on this subject states that in a period extending over more than twenty-five years he has performed three hundred and seven magnet operations and expresses deep regret to find in the literature of the subject assertions and rules which he cannot believe to be either right or useful. The statement that a freshly wounded eye, which may contain a deeply embedded iron splinter, should be attacked at once with the giant magnet, and that an eye in which no pain is felt by the patient must necessarily contain no iron-splinter appears to him to be wrong as regards the surgeon and harmful as regards the patient. In defense of this stand, he refers to more than a dozen cases in his own practice, in which the

presence of a splinter was proved by means of previous sideroscopy, radiography, or even ophthalmoscopy, but no pain was noticed from the giant magnet, and by its proper application the splinter was removed. The statement is harmful because this handling may draw a large splinter into the ciliary body whence it could not be extracted.

Hirschberg also assails the position of his poraries regarding the usefulness of the sideroscope. He declares that his improved and simplified instrument still and supplies retains its utility a surprisingly simple Sideroscopy must, in his opinand absolutely sure test. ion, be tried before surgical interference to ascertain the existence, the position, and the approximate weight of the ironsplinter within the eyeball. The x-ray and ophthalmoscopy. however, are not to be despised. This author also draws attention to another important fact in ocular injuries, namely, that if a splinter of iron has penetrated into the vitreous or the retina and be not properly extracted, vision of the eye is sooner or later lost. Here he refers to the smaller and not remarkable infective splinters which appear to be encapsulated and generally destroy vision after a varying period. Nothing but the early extraction of the splinter or the premature death of the patient can prevent this blindness.

Mention is made of several cases that vision with an encapsulated iron-splinter within number of years, but ultimately blindness Thus, in his opinion, we are bound to extract the splinter from the eveball if we are able to do so without serious damage to the structures of the eye. Fresh cases particularly should be operated upon. He employs the hand magnet, the middle-sized, and the giant magnet, and with his own hand magnet has performed some ideal operations. The statement that the introduction of the sterilized point of the hand magnet causes loss of the eyeball by infection or by detachment, he considers incorrect, but does not approve of the introduction of the bulky and not guidable point of the giant magnet as recently suggested by some authorities. Occasionally he finds it necessary to use the hand magnet in conjunction with the giant magnet. He also, at times, employs the hand magnet to extract through the corneal section, the splinter introduced into the anterior chamber, which procedure he finds easy, harmless, and elegant.

After a discussion of the various instruments and

their relative merits. Hirschberg presents a short abstract of his own statistics, collected from 1896 to 1903 inclusive Among 3.018 clinical nationts there were 64 cases of iron splinters in the retina or the vitreous, operated upon by means of the electromagnet. these 64 cases, 36 cases or 56 per cent had good and permanent vision: two-thirds of these successful cases, or 23 out of 36. obtained very good vision, from 1/2-1; 9 were from the vitreous, 27 from the retina, 22 were fresh cases, 14 were old. Of these 36 successful cases about one-third were operated upon with the hand magnet alone; two-thirds with the giant and the hand magnet together. Secondly, in 6 cases out of 64. or in 9 per cent., only the form of the globe was saved, but vision was lost. Thirdly, in 22 cases out of 64, or in 341/2 per cent.. excision followed extraction of the splinter; in the large majority of these cases, either the splinter was over large, or cyclitis or sepsis had already developed. S. H. B.

Aiveolar Melanoma of the Chorioid.

THOMPSON, R. L., St. Louis, (Interstate Medical Journal, May, 1905), in a recent communication gives an account of a peculiar case of alveolar sarcoma of the chorioid with metastases occurring in a man 40 years of age. Five years previous to his coming under this writer's observation he had had his left eve enucleated for the removal of the original malignant growth. At the time of his last admission to the hospital the patient showed visible swelling of left hypochondrium, and on palpation a hard tumor, the size of the palm of the hand could be felt apparently attached to the left lobe of the liver. There was also bulging of the lower third of the chest. The right leg was held flexed on the pelvis but could be extended. The pa-tient complained of constant and severe pain in the right thigh shooting to the ankle. He took nourishment poorly and rapidly failed; developed paraplegia with its attendant complications and died about three months after his admission.

A thorough post-mortem examination was made. As a result the diagnosis of melanotic sarcoma of the lungs, liver, mesenteric lymph-nodes, psoas muscles, and lumbar vertebræ. There were also present pyelonephritis, acute prostatitis chronic adhesive pleuritis, right hydrothorax, and edema of the brain. The interest in this case centers around the slow development of the growth and the histologic examination. The enucleated eye presented on section two apparently dis-

tinct tumor masses. The first was at the equator and within the chamber and consisted entirely of pigment and necrotic cell masses. The second was just posterior to the first, a part of it being separated from the first only by the sclera. This mass showed a connective tissue stroma in which were masses of spindle cells. The metastatic tumors were also subject to variation. In the left psoas, lung, and liver the growth was a typical spindle cell sarcoma while the right psoas, other portions of the liver, and lumbar vertebræ, the section showed a typical melanotic sarcoma. To solve the problem, then, as to whether two separate and distinct tumors. each with its own metastases or whether only one tumor is present, the charactertistics peculiar to each form of growth are discussed. Taking all the features of the case into consideration, he classifies the case as one of alveolar melanoma and remarks his inability to find in literature any record of a similar case. SHB

Obstruction of Retinal Arteries.

GREENWOOD, ALLEN, Boston, (Journal of A. M. A., March 11, 1905), considers at length the three principal causes of obstruction of the retinal arteries, viz., arterial disease, embolism and spasm. He thinks that primary thrombosis is rare. though thrombosis is frequently a complication of the above conditions. The most important arterial disease is arteriosclerosis, and he points out the earliest danger signals of this condition. They are a slight increase of arterial reflex, slight irregularities in the size of the arteries, slight congestion of the disc, and feathery outline. Where the artery crosses above the vein the latter may be compressed. A little feathery exudate is often seen beside the arteries which should not be mistaken for the opaque nerve fibres often observed. With thickening of the central artery venous pulsation may sometimes be observed ophthalmoscopically; one or all of these conditions may be present. In more advanced cases the light reflex is increased, the arteries become beaded, retinal lesions appear and, finally, we have the full picture of albuminuric retinitis. The early stages of arterial degeneration require the careful inspection of the upright image for their detection. Spasm, the author believes, most frequently occurs in the early stages of arteriosclerosis, and should be looked on as a warning of future obliterating endarteritis. The treatment of arterial sclerosis is mainly a well regulated life and

avoidance of nerve strain and excesses and keeping elimination and digestion unimpaired. Greenwood has been in the habit of advising long-continued use of small doses of iodid of potash. The treatment of embolism is rarely prompt enough to save the function of the retina, but Greenwood advises the early use of vasodilator drugs and deep massage to carry the embolus, if possible, into the smaller branches and to reduce the field defect. For spasm the treatment for arteriosclerosis should be carefully followed. Nitrite of amyl might be used to cut short an attack.

Protection from Roentgen-Ray Injuries.

LEONARD, C. L., Philadelphia, (Journal A. M. A., May 6, 1905), calls attention to the serious risk that x-ray operators undergo, especially if they follow the practice advised of testing the qualities of the rays on their hands with the fluorescent screen. The only practical method is to limit their radiated field by covering the Crookes tube. For this purpose he uses a pasteboard box a little wider than the diameter of the tube and covered with x-ray lead foil a little heavier than the ordinary tea lead. This extends two inches below the bottom of the box, and can be adjusted so as to limit the field to any extent required. It is not necessary to cover the anode end, and the box is held on a bracket over the portion of the body to be treated; if a very small field is required, a local shield may also be employed. He thinks possibly some effects are due to the strong induction field surrounding the coil which, especially in large hospitals, should be kept in another room, but with the controlling apparatus within the operator's reach. For the dermatitis of the operator's hands, he advises twice daily soaking in very warm water and scrubbing with Eichhoff's superfatted resorcin soap, followed by inunction of lanolin containing half an ounce of boric acid and a dram of resorcin to the ounce. For the acute erythema of x-ray treatment, he employs a stearate of zinc powder with 10 per cent, ichthyol, which he thinks acts as a prophylactic against severe burns. This should not be confused with stearate of zinc ointment, which may do harm. O. W.

Voluntary Iris.

SHERER, J. W., Kansas City, Mo., (*Journal A. M. A.*, May 6, 1905), reports a case of this very rare condition. It was first noticed at the age of 9 when the child developed the

power of voluntary rotating the eyeballs independently. After that it became a matter of common observation that the iris could be dilated at will, almost to the disappearing point. At puberty the right iris was for awhile twice the size of the other, but later they became equal again. The power to stimulate convergent strabismus is possessed by the woman to a remarkable degree. Vigorous exercise of the iris movements seem to cause slight aching of the eyes, but no other inconvenient symptoms are reported.

Evestrain.

POHLMAN, A. G., Bloomington, Ind., (Journal A. M. A., May 6, 1905), takes up the subject of the etiology of evestrain from a phylogenetic point of view, and assumes that the abnormalities of human vision are due to the change from the aboriginal to a domesticated condition. In this he includes, however, the changes from a horizontal position of the spinal axis to the upright position, and the more anterior and parallel position of the eyes, etc., which are shared by the higher simians with mankind. In man, however, there is a still further extension of the process, and there is developed a power of sustained convergence for nearwork. The divergent tendency exists in all animals, as is evident during sleep and after death. The special headache of sightseers is not due to strain on the elevator muscle, but to that on the internal rectus to overcome the greater divergence caused by looking upward. The tendency of civilized man is toward myopia, and the failure of sight in old age is a reversion toward the animal normal. O.W.

Visual Tests for Railway Employes.

BLACK, N. M., Milwaukee, (Journal A. M. A., February 18, 1905), has been studying this subject from the engine cab, and to illustrate his points he presents photographs taken from the engine. He concludes: (1) The best known standard of visual perception should be required in men concerned in active operation of trains. (2) The signal systems in vogue, while not perfect, are sufficiently adequate for the standard of vision required and the present speed of trains. (3) Certain physical and accidental conditions about engines interfering with vision can not be overcome unless the position of the enginemen can be changed. (4) Certain atmospheric conditions interfering with vision can not be overcome; others

can be mitigated or entirely relieved by the use of some form of protection to the eyes. (5) Glasses are not a hindrance to enginemen, and their use should be allowed to protect the eyes or to bring the vision up to required standard, but no person should be accepted into service requiring them or who will accept a plus lens of 1½ or 2 diopters. (6) With four reports emanating from four different sources of equal merit and standing and all different in small details, perfect uniformity in examination of railway employes is out of the question, as we can not expect the officials of all the roads to decide on the same report. (7) It would be well for state societies recommending legislation on this point to confer and make their reports uniform, since the laws will necessarily be based on them.

Optic Neuritis and Facial Paralysis.

SHUMWAY, E. A., Philadelphia, (Journal A. M. A., February 11, 1905), reports a case of postpapillitic optic atrophy with a history of prior right-sided facial paralysis with pain in jaw and with a noticeable flattening of the right side of the face from loss of subcutaneous fat, together with enophthalmus, all on the right side, while the optic atrophy was bilateral, most marked on the left. He finds in the literature only seven similar cases of this association of facial paralysis and optic neuritis, though a number of cases of optic neuritis have been reported in connection with polyneuritis. The atrophy and sinking of the eyeball is evidently rarer, as he has found no reports of a similar case. He has, however, been able to examine a case of Dr. Spiller's with flattening of the face and enophthalmus following rheumatic facial paralysis and implying, he thinks, as in his own case, some involvement of the seventh nerve. There were chloroanemic and disordered menstrual symptoms in Shumway's case, but he does not attribute to them the optic atrophy. His conclusions are given as follows: "(1) Optic neuritis is occasionally associated with facial paralysis, either alone or as part of a multiple neuritis; the etiologic factor may be rheumatism, but at times appears to be infection, the nature of which is as yet undetermined. optic neuritis is usually of the retrobulbar type, but a decided papillitis may be present, and be followed by more or less marked atrophy. In cases of multiple neuritis of the cranial nerves, the eye grounds should be examined for possible optic nerve complication. (2) In facial paralysis, flattening of the

face and enophthalmus may appear, and are to be considered as due to a neuritis of the fifth nerve, and not to involvement of possible sensory fibers in the facial nerve."

O. W.

Ophthalmia Neonatorum.

Jackson, E., Denver, (Journal A. M. A., March 11, 1905), holds that rigid cleanliness, while it will greatly diminish the number of cases of blindness from this cause, will not always prevent it, and that the Crede method, while efficient, sometimes causes irritation. He sees some hope in the use of some of the less irritant silver salts than the nitrate, but believes that we need more experience in their use before we can give them the same confidence. Even in case of actual purulent disease, careful treatment will usually prevent blindness. He thinks that social conditions favoring or opposing the spread of gonorrhea are more important than legislative measures aimed directly at purulent conjunctivitis, and that gonorrhea is a malignant contagious disease and should be publicly recognized and dealt with as such in all its clinical manifestations.

O. W.

General Therapeutics in Ocular Diseases.

RAMSAY, A. MAITLAND, Glasgow, Scotland, (Journal A. M. A., March 4, 1905), points out the danger of a narrow specialism and the necessity of paying atention to the broad principles underlying all rational therapeutics, applying this especially to ophthalmology. He emphasizes the evil of assigning to local treatment more than its proper value and the necessity of a study of the general principles of pathology before real progress can be made in the treatment of diseases of the eve. He states that local conditions can often be explained by a study of the general systemic condition. Improper feeding with defective elimination, for example, is often the cause of phlyctenular conjunctivitis, and this illustration of the general principle is carried out at some length in the paper. The importance of assimilation and elimination as a basis for rational therapeutics is insisted on, and Ramsay emphasizes the importance of rest as an aid to nutrition. O. W

Pulsating Exophthalmos.

HANSELL, H. F., Philadelphia, (Journal A. M. A., February 18, 1905), reports a case, and W. W. Keen adds the surgical report. As no postmortem was allowed the exact condi-

tions could not be verified, but it is probable that, like 60 per cent, of the cases generally, it was due to rupture of the carotid artery in its passage through the cavernous sinus. While the tvirg of the other carotid was a regrettable necessity, it seemed unavoidable, notwithstanding the possibility of incomplete establishment of the collateral circulation. The return of the affection after ligation, as in this case, may, the author remarks, he due to deficient coagulation of the blood or the veins may close on the same side, but the blood finds its way to the other side through the circular sinus, or there may be a fresh aneurism or the superior ophthalmic vein of the side first affected has been obliterated at its opening into the cavernous sinus by thrombosis of the sinus produced by the carotid ligation. The cavernous sinus regains its permeability and the still yielding cicatrix in the arterial wall yields and opens again. The arterial blood again enters the sinus, passes through the circular sinus to the opposite side and cruses there the symptoms of pulsating exophthalmos. against ligation are mentioned the possibilities of the symptoms continuing without harm and the possibility in rare cases of spontaneous cure. O. W.

Intermittent Exophthalmos.

Posey, W. C. Philadelphia, (Journal A. M. A., February 18, 1905), reports an instance of this rare affection, of which he is able to collect only 39 cases in the literature. He thinks that it is probably more frequent than supposed. Its characteristic symptom is the pushing or falling forward of the eyeball when in a dependent position or when the return of blood from the head is interfered with by holding the breath, pressure on the jugulars, coughing, sneezing, tight collars, etc. The proptosis is usually unaccompanied by pain and the patient may be unconscious of it. Vision may be unaffected or permanently impaired or lost. Generally it is only impaired during the protrusion. The diagnosis is easy and the prognosis is generally good. The patient should avoid excessive strain and anything that causes the eye to proptose. Ordinarily operation should be advised against, though where hemorrhage has occurred and vision is threatened Hitschmann's counsel to lay bare and resect the affected veins may perhaps be followed, Krönlein's operation being resorted to if necessary. O. W.

Transient Functional Hemiopia.

KIPP, C. J., Newark, N. J., (Journal A. M. A.) describes the condition known under this name, and sometimes spoken of as scintillating scotoma, teichopsie, ophthalmic migraine, etc. He finds it generally hemiopic in form. The condition is not always described in text-books, but as its first appearance is ant to be alarming to the patient, it is well, he thinks, that the symptoms should be given in detail. Repeated attacks generally result in indifference on the part of the pa-They are often of the nervous type, and frequently have other neurotic symptoms. They are usually in good general health, and are often free from refractive errors, and, in most of his cases, even free from muscular ocular defects. The exciting causes and pathology are not very well known. but Kipp is inclined to believe that in most cases there is a temporary functional derangement of the cells of the cerebral optical mechanism, and he quotes Jolley, who says that in the most frequent hemiopic form the cells of the optic tract or of the internal geniculate body are involved; that the binocular, central and hemiopic scotomata which cross over the median line originate more peripherally, probably in the region of the chiasm; and that the purely monocular scotoma originates in the optic nerve or retina. For treatment he suggests rest during the attack, usually in a recumbent position. He quotes Gower's advice as to the treatment of migrain by correction of any errors in living, by avoidance of hot, crowded rooms, in case of inherited gout proper treatment for this condition, and in cases with marked pallor, the use of minute doses of nitroglycerin during the intervals of the attacks. As regards cutting off the attacks he has no definite advice to offer O. W.

Reclination of the Lens.

ROGERS, H. T., Providence, R. I., (Journal A. M. A., April 22, 1905), reviews the literature on the old operation of couching and gives the replies received from various prominent ophthalmologists in answer to a letter addressed to them by him asking about their experience with, and their opinion of, this operation. He also gives reports of a case in detail. He concludes that the operation is permissible in the following conditions: (1) In the aged and infirm and in those suffering from exhaustive diseases. (2) When there is non-curable infection of the conjunctiva or of the lacrimal sac. (3)

When one eve has been lost by suppuration or hemorrhage following operation and a similar result is feared. (4) In obstinate bronchitis (5) In fluid vitreous with tremulous iris. (6) In insane or unmanageable patients. (7) In the very deaf, where the assistance of the patient can not be secured. While the majority of his correspondents advise against the operation. Rogers things that it should not be relegated to complete oblivion, at least in cases of obstinate dacryocystitis or conjunctivitis. He thinks that the arguments used by some of those who oppose it in these cases are not based on experience. In the case reported, besides the loss of the first eve by suppuration after iridectomy, there was a chronic intractable conjunctivitis and diabetes, affecting the general nutrition. The operation was at least partially successful though the result was not perfect, and it demonstrates that it can be done without the inevitably disastrous results claimed by some. O. W.

Eyestrain.

DIXON, L. S., Boston, (Journal A. M. A., April 22, 1905), states that eyestrain is not a medical fad, but a serious reality. The eve as an optical instrument is in most cases more or less imperfect, and while a vigorous constitution and nervous organization in some cases may compensate for the overtaxing of the ciliary muscles, in others this is a decided tax, producing sooner or later serious consequences, both local and general. He emphasizes the necessity for complete rest for the eyes and for properly fitted glasses. The patient should learn to accept as much correction as he can and to follow the oculist's directions. Easy vision without fatigue. Dr. Dixon says. is the test of a good eye, not sharpness and clearness of vision, which may exist with serious discomfort. He advises early search for errors in the child before habits are formed that it is necessary to break and when the child can learn to accept full correction. The use of glasses part of the time at home in the house may be sufficient to ward off present and future trouble. O. W.

The Therapeutic Use of the X-Rays.

First referring to his earlier articles on the subject, W. A. Pusey, Chicago, gives (*Journal A. M. A.*, May 13, 1905), the results of his later experience with the x-ray. In some disorders, such as hypertrichosis and lupus erythematosus, the

results have not equaled expectations; in some others, such as tubercular glands and joints and deep sinuses, the results have been variable, though with some marked successes. The value of the x-rays has been most markedly demonstrated in sycosis, tinea, acne, rosacea, lupus vulgaris, blastomycosis, cutaneous carcinomata and senile keratoses. The value of the x-rays has also been shown in hyperidrosis, inflammatory dermatoses, pruritus, nevi, keloid, sarcoma and as a prophylactic after operation for malignant disease. In some other conditions, abdominal tuberculosis, actinomycosis, tumors of the parotid, there has been apparent benefit from the x-rays, but Pusey does not feel inclined, from his experience, to make any very positive generalization. In the deeper situated cancers, as might be expected, the treatment is less hopeful, though palliation may be hoped for and some surprisingly good results are reported. In conclusion, Dr. Pusey gives his latest experience with pseudoleukemia, leukemia and goiter. In the former he has repeatedly seen clearing up of the glands, but in the only case he has been able to follow up there have been repeated recurrences. In true leukemia he has seen like good effects as regards disappearance of the enlarged glands, but generally without any corresponding improvement in the condition of the blood. One remarkably successful apparent cure is reported, the blood examination revealing normal conditions and the patient apparently well. In some small parenchymatous goiters he has seen reduction in size of the tumor, but in most of his cases no benefit was observed.

Congenital Deficiency of Abduction, Associated with Impairment of Adduction, Retraction Movements, Contraction of the Palpebrai Fissure, and Oblique Movements of the Eyes.

DUANE, A. (Archives of Ophthalmology, March, 1905) has collected 54 cases of this anomaly, including 11 hitherto unpublished. The syndrome, for such it may properly be called, has been described among others by Collins, Türk, Sinclair, and Friedenwald, but particularly by Wolff, Axenfeld and Schürenberg, and Evans. (For last-named see Annals, 1903, p. 312). The main objective symptoms are, that the affected eye can move out little or not at all beyond the middle line, and when the attempt is made to move it out it often protrudes and the palpebral fissure widens. Furthermore, it moves inward imperfectly both in performing lateral movements and in converging; and when the attempt is made to

move it in, it retracts into the orbit and the palpebral fissure narrows, the eye itself at the same time often shooting obliquely upward (sometimes obliquely downward). These features are not necessarily all found in any given case, their comparative frequency being shown by the following figures: (a) Restriction of abduction. In 41 cases abduction was almost or quite absent, in 12 more or less deficient, and in one only was nearly normal. The power of abduction is often greater when the eve is elevated or depressed than when in the horizontal plane. (b) Restriction of adduction. Out of 49 cases, adduction was normal in 2, diminished slightly in 2. diminished notably in 37, absent or practically absent in 8. (c) Oblique movement of eye when adducted. In 31 out of 34 cases the affected eve made oblique movements when adducted: shooting up and in, in 24, and down and in, in 3: while in 4 it went up and in when the eves were directed up and down and in when the eves were directed down. (d) Torsion movements. Spasmodic torsion movements when the eve was abducted or adducted were noted in at least 9 cases. (e) Retraction movements when the eve is adducted. These were marked in 32 cases, slight in 6, very slight in 3, absent in 2. The amount of the retraction varied from 1 to 10 mm. It may sometimes be apparent only, and in the same case may vary greatly from time to time. In 14 cases out of 17 there was retraction (enophthalmus) in the primary position. Retraction movements may be found, though rarely, in other conditions than that here described. (f) Protrusion of the affected eye when abducted. This was noted in 9 out of 11 cases. (g) Narrowing of the palpebral fissure of the affected eve when adducted. Noted as present in 40 cases, absent in 2. In a number of cases it was present even in the primary position. In abduction or attempted abduction the palpebral fissure usually dilates (in 14 out of 15 cases). (h) Insufficiency of convergence. Out of 20 cases convergence was normal or nearly so in 4, decidedly weak in 7, and nearly or quite absent in 9. (i) Restriction of passive movement (when the attempt is made to move the eve with the forceps). Present in 6 cases and absent in one case, while in another case there was no resistance to passive movement, but the eye when released returned with a jump to the original position (elastic return). (i) Deviation in the primary position. In the primary position there may be orthophoria (6 cases), divergence (10 cases), or convergence (18 cases); also often a marked vertical deviation. (k) Secondary deviation of the sound eve.

This was present in 13 out of 14 cases, and in 8 at least the primary exceeded the secondary, just as it does in acquired paralysis. (1) Faulty position of the head. Often present; the attitude assumed depending on the kind of deviation present in the primary position. (m) False projection and (n) nystagmus are infrequent.. (o) Relation to ametropia. Most of the cases were hypermetropic, but only a few were cases of high hypermetropia, high astigmatism, or marked anisometropia. (p) Frequency in women. 31 out of 51 cases were females. (q) Frequency in the left eye. The left eye was affected in 38 cases, the right eye in 11, and 5 cases were bilateral. (r) Absence of involvement of the ciliary muscle or sphincter. The interior muscles were not involved in any of the cases.

The subjective symptoms noted were imperfect vision in about one-third of the cases; asthenopia, headache, and a sense of strain; diplopia, often spontaneous and almost always producible. The field of single vision is usually very narrow, the diplopia often changing almost at once from homonymous to crossed as the eyes are turned from left to right.

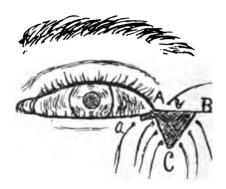
The primary cause of the condition in most cases is either absence of the external rectus or its replacement by a connective tissue cord, which may be either elastic or inelastic. This produces the deficiency of abduction, and if the cord is inelastic also produces the restriction of adduction, the retraction, and the resistance that is sometimes met with to passive movements of the eves inward (by traction with forceps). When an elastic cord replaces the externus, the restriction of adduction and the retraction are probably due to insertion of the internus too far back, although in some cases the retraction has been proved to be due to the presence of an extra muscular slip attached far back and acting as a retractor. Either a posterior insertion of the internus or the presence of an extra retractor slip may be assumed to exist if forced adduction with forceps fails to produce retraction, although retraction is present when the eye is adducted by voluntary effort. Other theories put forth to account for the retraction are (a) absence of the check ligaments and (b) a retracting action of the superior and inferior recti. Per contra the protrusion in abduction is ascribed to the protracting action of the obliques. The oblique movements of the eve in inward rotation, and also the torsion movements and the greater freedom of abduction when the eye is elevated or depressed are regarded by the author as attributable to spasmodic action of the obliques. The contraction of the palpebral fissure is probably the result of some synergic action of the orbicularis. The insufficiency of convergence is probably due to mechanical interference with the action of the internus, and is therefore, like all the other symptoms, purely peripheral in origin.

Treatment is of little avail. Advancement is contra-indicated. In suitable cases tenotomy or lengthening of a tendon in the affected eye or better tenotomy of a muscle in the fellow eye may be performed.

M. L. F.

Operation for Senile Entropion.

McMillan, Lewis, Glasgow (Ophthalmic Review, March 1905), describes a new entropion operation which he considers more satisfactory than the usual one of excising an elliptical piece of skin from the lower lid. The outer canthus being



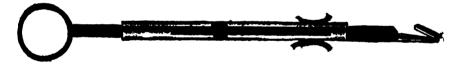
split and the incision extended outward from A. to B., a triangular-shaped piece of skin, A. C. B., with its base formed by the lower margin of the incision A. B., is removed, a small piece of the margin of the lower lid at A, being also subsequently removed. Horse-hair sutures are now placed from side to side to close the opening A. C. B. Three will be sufficient, an additional one being passed from the border of the lower lid at a to the skin above the primary incision at b, if thought necessary. The lid is thus tightened up by being drawn outwards and the eyelashes are everted. There is no resulting deformity following the operation.

S. H. B.

New Instrument for Iridotomy.

PASCHEFF, C., Bulgaria, (Ophthalmic Review, March, 1905) in an endeavor to revive the operation of iridotomy in cataract operations and to render the operation more easily performed

when desired for optical purposes, has devised a new instrument which he thinks will be of great value. The iridotome



consists of two lancets gliding one within the other. The one terminates with a kind of cutting hook which is intended to go below the iris; the second terminates with a blade destined to cut through the part of the iris included between the two. The instrument can be taken apart and the two lancets sterilized.

The Use of Paraffin Spheres in Frost's Operation (Modified Mules') With a Report of Twenty-three Cases.

Spratt, Charles Nelson, Minneapolis, (Archives of Ophthalmology, March, 1905), presents a brief history of the development of the modifications of the operation of enucleation and describes the employment of various substances in the sclera and in Tenon's capsule for the purpose of obtaining a more movable stump with the minimum of danger. He credits Oatman with having first used paraffin for this purpose in the sclera, but curiously has failed to credit him with the first use of this substance in Tenon's capsule, although the latter was described at the New York Academy of Medicine, April 20, 1903, and published in the Archives of Ophthalmology, vol. xxxii, page 389, 1903. His conclusions are that the modified Mules or Frost operation combines the cosmetic results of Mules with the advantages of simple enucleation. These are:

- 1. Good cosmetic result is obtained; the artificial eye has good motion; the eye does not have a receding appearance; and the glass is in contact with the lids.
- 2. Secretions will not accumulate in the hollow behind the eve. as this is occupied by the stump.
- 3. Globe is preserved in toto for microscopic or macroscopic preparations.
- 4. No danger of overlooking malignant intraocular tu-
 - 5. Best prophylaxis against sympathetic ophthalmia.

Paraffin is the most suitable material for the prothesis:

- 1. It is non-irritating and least likely to be extruded.
- 2. Spheres can be easily made and are inexpensive.

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- 3. No danger of being broken.
- 4. Paraffin adapts itself to the shape of the cavity, is soon surrounded by a fibrous capsule, and is firmly held in place by connective tissue down-growths.

 M. L. F.

A Case of Probable Rupture of the Optic Nerve.

SHARP, WALTER N., Indianapolis, Ind., (Archives of Oblithalmology, March, 1905), reports a curious case in which a man 55 years of age fell so that the small end of an umbrella stick struck him in the inner canthus of the left eye, caused immediate blindness and bleeding from the eve and nose. Three and a half hours later the lids were edematous, ecchymosed and tense, the ocular conjunctiva protruding between them, with no crepitation or other sign of fracture. Vision was lost. Pain was intense, but this ceased after a few hours. Two days later a small wound was found in the conjunctiva large enough to admit a No. 6 lacrimal probe. The eveball itself was not ruptured. Three days after the accident ecchymosis appeared in the lid of the other eve. The fundus was edematous and atrophy of the optic nerve ensued. There was no trace of sepsis at any time. The clot was absorbed and the edema subsided in 10 days. The diagnosis of probable rupture of the optic nerve was made from the sudden loss of vision and the absence of symptoms of orbital wall fracture or sinus involvement. M. L. F.

Thrombosis of the Central Vein of the Retina in Chiorosis.

Ballaban, Theodor, Lemberg, (Archives of Ophthalmology, March 1905), reports a case in which the diagnosis of "thrombosis of the central vein" was based on these circulatory phenomena: The distension of the veins, with diminished size of the arteries; the segmentation of the blood columns in the veins; and the fact that increase of intraocular tension by pressure with the finger upon the eyeball produced neither pulsation nor expulsion of the blood from the veins on the papilla.

M. L. F.

Studies in the Light-Sense.

HAY, PERCIVAL, J., Birmingham, Eng., (Archives of Ophthalmology, March, 1905), describes a photometer designed by himself. By the polarization of the rays of light a very delicate instrument is obtained in which the range of the light sense is divided into nine hundred parts, and it can be made even more delicate by means of an additional device. It can

be used to test the light-minimum and the light-difference under the same conditions. The results obtained by the author from his examinations of eyes with his new photometer are thus summarized:

Refractive errors, if low, do not affect the light sense; if high, they tend to increase the light difference.

Vitreous opacities increase both the light-minimum and the light-difference.

Chorioiditis, other than syphilitic and disseminated, affects both the light-minimum and the light-difference. The light-minimum is generally more affected than the light-difference, but not invariably so. The implication of the light-sense seems to vary in extent according to the position of the lesion. It appears to be more impaired if the lesion is close to the macula.

Glaucoma chiefly increases the light-difference. An increase in the light-difference may be one of the earliest signs of the disease.

Optic atrophy generally affects the light-difference, but there are cases in which the light-minimum is very much increased.

Retinitis increases both the light-minimum and the light-difference. Affections involving the internal layers of the retina more than the external ones do not seem to effect the lightsense as much as those situated in the external layers.

On Peritomy for Diffuse Corneitis and Other Affections of the Cornea.

SNELL, SIMEON, Sheffield, (Ophthalmology, April, 1905), records his second article on this operation based on more than 200 cases and further testifies to its value. A brief history of the operation is given and the steps described as follows: A general anesthetic is not always required, in the majority of instances cocain being used with the addition generally of adrenalin. A fold of conjunctiva is seized and snipped with curved scissors. The conjunctiva is then severed all around the cornea at a distance of from 2-3 mm. portion left next the cornea is then dissected up and removed. Recovery from the operation is usually rapid and after a lapse of a short time there is no indication that an operation has been performed. The writer concludes: "In my opinion we have in peritomy a means of very distinct therapeutic value. It may be employed as a routine treatment in diffuse corneitis. and may be expected often to materially shorten the course of this frequently very protracted and serious disease, and the cornea will recover more completely its transparency than if

the operation had not been performed. It may further be used advantageously in a variety of other corneal affections."

H, G, G

Sarcoma of the Orbit with Report of Cases.

Belt, E. Oliver, (Ophthalmology, April, 1905), presents four cases, one arising from the lower lid; the second, which was an osteosarcoma, probably in the orbit by metastasis, the third in the eyeball, and the fourth in the orbit. The writer's experience in these four cases bears out the general agreement that sarcoma is rapidly fatal, except that complete extirpation would seem to give greater hope than is usually admitted. In all four cases the entire contents of the orbit were removed and in two of the cases sufficient time has elapsed since the operation to render the chances of recovery reasonably hopeful, while the other two are of such recent date that an opinion may not be ventured upon. H. G. G.

Elephantiasis of the Upper Lid.

HARLAN, H. and JOHNSTON, R. H., (Ophthalmology, April, 1905), state that according to Lagrange only 20 well authenticated cases have been recorded. Fortunately, in some of these, careful histological examinations have been made and the pathology of the disease is well established. The following clinical history is given: M. M., 14 years old, American born, was admitted into the clinic of the senior author April 16th, 1902. Nine or ten years before she had been treated for enlargement of the left upper lid. Three days before her second admission she was struck in the left eve with a stick, so that when admitted the upper lid was so swollen that only a small part of the eveball could be seen. A perforating wound above the cornea in the ciliary region was present. The upper lid was thickened and hung down on the cheek. The eve was enucleated for panophthalmitis resulting from the injury. and several weeks later the patient was discharged with the lid somewhat reduced in size, but still large and thick. Ten months later the patient returned for an operation on the enlarged lid, and under chloroform anesthesia a great deal of tissue was removed. Less than a month later the lid was almost normal in appearance as the result of the operation. The tissue was prepared and a histological examination revealed the characteristics of a genuine case of elephantiasis of congenital origin. As regards the etiology, the affection is usually congenital. It attacks males and females with equal

frequency. The upper lid is the one usually involved. Traumatism exercises a decided influence on the rapidity of its development. Surgical intervention sometimes causes rapid growth. The influence of erysipelas on acquired elephantiasis has already been emphasized. The only effective treatment seems to be a removal of the mass.

H. G. G.

The Question of Iridectomy in Glaucoma Simplex.

CHENEY. FREDERICK E., (Obhthalmology, April, 1905). states that as to the value of iridectomy in glaucoma simplex opinions differ. To the writer iridectomy seems theoretically advisable. It is of unquestionable value in reducing tension in other forms of glaucoma, and that is what we should try to accomplish in galucoma simplex. The fact that the intraocular tension of a given eve has produced a glaucomatous cup is sufficient proof that the tension is supranormal in that eye. The important point being that the disc cannot resist the existing intraocular pressure and that, so far as we know, reduction of this tension offers the best chance of checking the advance of the disease. Admitting that iridectomy is a perfectly natural procedure in glaucoma simplex there are certain questions to be carefully considered, such as, that the eve may retain useful vision for years if not interfered with, and the other that absolute and permanent blindness may result quickly from iridectomy. The age of the patient should be a deciding point for or against operation. In a healthy individual, 40 years of age, an iridectomy may be urged, loss of sight without operation being, of course, inevitable. Between 50 and 60 one might still advise operation and it is not necessarily contraindicated after 65 or 70. In this connection the life probability should be considered and the presence or absence of other organic diseases. When one eve is blind and the disease has made itself manifest in the second eve, the question of operation is naturally one of much greater importance; in this case, if possible, the operation should be avoided if the patient is over 60, unless the progress in the first eve has been of exceptional rapidity. The disease is not, as a rule, one of early life; and its very slow progress in most cases, the life probability as indicated by the patient's age. general condition and ancestry and the possibility of blindness resulting from operative interference are points that are H, G, G,too often disregarded.

Intraocular Tuberculosis, with the Report of Two Cases.

Posey, Wm. Campbell, (Ophthalmology, April, 1905), records the following cases:

Case 1. Tubercle of the iris. A small vellowish white nodule the size of a very small pea, which projected from the root of the upper inner quadrant of the iris into the anterior chamber. Its summit was vellowish white: its base reddish brown. this coloring being due to a layer of pigment. The iris was thickened and discolored and synechiæ were present; no view of the fundus on account of the haze of the media. But little ocular, but some headache on the affected side. eye was healthy. This with a family history of two children having died of consumption, the suspicion of tubercle was awakened, although it was impossible to definitely determine whether the child had any form of tuberculosis. The tumor grew rapidly until it equaled the size of a large pea, and enucleation was proposed. A histological examination of the eveball revealed the tuberculous nature of the growth which was further corroborated by the presence in the tissue's of the organism, and by inoculation of two guinea-pigs and a rabbit.

Case 2. Tubercle of the chorioid. Venereal history and family history negative and no history of traumatism. The left eve was the seat of a marked tarsal and ciliary injection: the cornea was very hazy, presenting a ground-glass appearance. due to numerous nodules of yellowish infiltration, which were scattered throughout the substantia propria. The pupil was oval, 3x4 mm. in size, and did not react to light. Tension somewhat elevated; under treatment the eye failed to improve, until the centre of the cornea became infiltrated by a ring-like zone of lymph, the epithelium being roughened in places. A distinct swelling appeared in the scleral tissues at the equator of the globe. After two months of treatment the signs of active inflammation subsided and the swelling at the equator became less pronounced. The patient was discharged, being given inunctions of mercury, owing to a provisional diagnosis of gumma of the chorioid having been made. At the end of six months the eve was still slightly irritated but the cornea had cleared somewhat. Six months later than this, the patient having been kept under observation, it was noticed that the ciliary injection was much the same, but the anterior chamber had grown very shallow. The lens was cataractous and the tension elevated. The swelling in the sclera had entirely disappeared. In consultation

enucleation was advised, and the operation performed. Four years have now elapsed since the operation, the socket has remained healthy and the health of the patient has continued excellent. There are no other symptoms of tuberculosis elsewhere in the body. The eyeball was prepared for microscopic examination in the usual manner, and revealed after careful study the characteristics of an extensive tuberculous degeneration.

Some Remarks on Molluscum Contagiosum,

OPPENHEIMER, E. H., Berlin, (Ophthalmology, April, 1905). bases his opinions on his observations of four cases which occurred in the course of the last year and some cases seen six years ago in South Germany. He believes, that molluscum. like trachoma and other diseases, shows certain geographical tendencies, which may be accounted for by supposing that the disease is contagious and occurs in epidemics. Although in one case the disease spread by inoculation from one lid to the other, in not a single case did he discover that three members of the family, or of the house, or other schoolmates had been infected. As to the size of molluscum growths there seems to be some erroneous opinions. They are invariably described as having the size of a pea. Generally they occur in crops and are not half this large, varying from the size of a small pea to that of a pin's head. As to treatment, the writer simply expresses their contents with a small forceps and covers the parts with xeroform. Three of his cases, under this treatment, healed promptly; one case had a relapse after three months, and was then cured by means of the same H, G, Gtreatment

The Treatment of Pyogenic Infection of the Eveball.

RAMSAY, A. MAITLAND, Glasgow, (Ophthalmology, April, 1905), in his prophylactic treatment advises the use of sterile physiologic salt solution or a saturated solution of boracic acid, and for the past two years a systematic bacteriological investigation has been made of the fluids in the conjunctival sacs of all the patients with cataract on whom he has operated. In this way it has been demonstrated over and over again that the wound heals perfectly in the presence of the staphylacoccus albus, provided the patient be in sound health and the microbes are not present in overwhelming numbers. The most important indications for the treatment of suppurative keratitis, are to keep the eye at rest, to protect it from further in-

jury and to relieve the pain. Iritis being such a frequent complication atropin should be instilled at the very onset, and when there is much congestion of the iris and acute pain the application of a leech is of great value. For severe irritation and much pericorneal injection, great benefit is obtained from the application of fomentations followed after each change by irrigation with disinfectants, washing the eye clean of any discharge. In addition to such local means, general constitutional treatment is always required, such as a calomel purge followed by a saline draught, good feeding and the internal administration of quinin, or morphia by hypodermic injec-When the milder forms of treatment fail to relieve pain or check the ulcerative processes and the pupil fails to dilate, the actual cautery should be applied without delay. The author's treatment for a recent wound when the eve does not contain a foreign body, is to thoroughly cleanse the conjunctival sac with a hot saturated solution of boracic acid or with a normal salt solution, to carefully clear the lips of the wound of any prolapse of iris or ciliary body, to irrigate the anterior chamber and wash out the lens if it be cataractous. and to apply a collargol disc over the wound, which is then covered by a flap of conjunctiva. A drop of atropin is instilled, the eve bandaged and the patient put to bed.

H. G. G.

ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE

RV

WILLIAM T. SHOEMAKER, M. D.,

PHILADELPHIA.

WALDEMAR E. FISCHER, M. D.,

SAINT LOUIS,

AND

CLARENCE LOEB, M. D.,

SAINT LOUIS,

Diagnosis Register for Ophthalmologists.

COHN, PROF. HERMANN (Wochenschrift für Therapie und Hygiene des Auges, April 27th, 1905), with a view toward simplying the gathering of statistics, recommends that every ophthalmic surgeon keep a register of the diagnosis of all cases seen by him, and publishes such a register.

The register contains twenty-two sections as follows: Conjunctiva, Cornea, Sclera, Iris, Chorioid, Glaucoma, Optic Nerve and Retina, Amblyopia, Amaurosis, Lens, Vitreous, Bulbus, Refraction, Accommodation, Muscles, Tri-Facial Nerve, Lacrimal Apparatus, Orbit, Lids, Diverse (hypochondria, physiological conditions considered as pathological, simulation, cases without certain diagnosis), Traumatisms and other diseases complicated with ocular involvement. Under these twenty-two headings, two hundred and sixty-nine diseases and conditions are tabulated.

Like all such tables, the nomenclature although very comprehensive, does not provide for all conditions and their combinations, thus tempting the one using it to place under certtain diagnoses cases not actually belonging there.

W. T. S.

The Successful Treatment of a Primary Progressive Keratoconus By Subconjunctival Injection.

SEIM, A., Weyl, (Wochenschrift für Therapie und Hygiene des Auges, April 27th, 1905). Regarding keratoconus Seim considers:

- 1. The principal change in conical cornea to be a diminution in resistance, and a thinning from leucomatous degeneration of the central and para-central portion of the cornea.
- 2. The cause of the degeneration is nutritional disturbance from some tissue weakening general disease.
- 3. The reason why the cornea should be thus attacked in this general disease process is not known. Increase in tension is a secondary symptom, and is from the standpoint of treatment irrelevant.
- 4. The usual methods of treatment, cauterization with and without perforation followed by tattooing, etc., are applied later in the disease and not at its commencement. They do not restore function and are unsatisfactory. Eyes operated upon by these methods are no longer capable of near work.
- 5. For the treatment of deep lying nutritional disturbances of the cornea, and for rapid restoration after loss of substance, we have in subconjunctival therapy a trustworthy remedy.
- 6. Two per cent. solution of sodium chlorid alone, or in combination with dionin is to be used, without restriction when necessary, every day. The corneal tissue is better nourished, the lamellæ become thicker and more resistant, the surface flattens and recovers its normal curvature.
- 7. When possible to recognize the underlying general disease, and favorably influence it, this is to be done, and in conjunction with sub-conjunctival injection, we have an ideal method of treatment.

Seim reports in extenso the case of a woman, 25 years old, treated in this manner for three months with rather remarkable success. The case had monocular diplopia which had practically disappeared after three injections.

W. T. S.

Basal Fracture.

Von Haselberg, (Zentralbl. f. i. Mediz. Wiss., 1905. No. 5. Ref. from Wochenschrift für Therapie und Hygiene des Auges, May 4th, 1905). Von Haselberg calls attention to the necessity of ophthalmic examination in cases of fracture of the base of the skull. Optic atrophy can follow a basal frac-

ture, from callus formation, and can also be a late manifestation of small fissured fractures. In the case observed by the author, a few weeks after the fracture there were headache, vertigo, diminution of vision with a central color scotoma, contracted fields and night blindness. The cause must be a hemorrhage into the nerve sheath, or callus formation with peripheral compression of the nerve.

Among forty cases of basal fracture, choked disk was observed four times, two of which cases ended favorably. In several cases, hemorrhagic remains (pigment) were found in the nerve sheath. Transient muscle paralysis is frequently due to hemorrhage in the orbit causing compression of the nerves, or to hemorrhage and compression at the base.

Isolated trochlearis paralysis was observed four times. In twenty of the forty cases of basal fracture, the ocular findings were entirely negative.

W. T. S.

Abrasion of the Cornea, (Operative.)

Heilbron, Franz (Wochenschrift für Therapie und Hygiene des Auges, April 20th, 1905). Heilbron has practiced this operation in forty cases, twenty-five times for the improvement of vision, and fifteen times for the prevention of recurrent inflammation in old corneal cicatrices. He uses a short spoon or a small von Graefe knife, if the surface is very uneven and there is considerable thickening. The size, extent, and depth of the opacity is carefully studied by focal illumination and the loupe; atropin and iodoform ointment are instilled after the operation, and the eye bandaged. In most cases recovery takes place without reaction.

The pathologico-anatomical phenomena after operative abrasion of the cornea are explained after a consideration of those in the reparation of the cornea following abscess. In the latter condition, cells crowd the corneal parynchema, and form the so-called exudate. The epithelium remains normal, but the cornea appears opaque. The greater the exudation, the more threatened is the corneal ground substance. There is a loss of substance, deeper as the pus enters and causes fusion of the deeper lamella.

If the abscess is cleansed, the surface is at once covered with epithelium. Bowman's membrane is never regenerated.

The new or scar tissue consists of bundles of connective tissue. Fibrillar arrangement of the bundles, lymph spaces and lymph canals, and fixed corneal corpuscles are absent. This tissue is not transparent. Frequently, the epithelium is thick

and irregular. When now this tissue is artifically removed, the then resulting scar is of much less intensity. The single irritation has not the same significance as the previous destructive leucocytosis.

Massage with yellow ointment after abrasion of the cornea is more efficient in causing the opacity to clear up. If the destructive process has involved the deeper lamellæ of the cornea—one-half the thickness—improvement after abrasion is not to be expected.

Heilbron's conclusions are:

- 1. Abrasion of the cornea for the improvement of vision is indicated in all cases in which the opacity is a well-defined and limited one in the superficial lamellæ of the cornea.
- 2. Abrasion of the cornea, followed by massage is a valuable operation in cases of recurrent inflammation in old corneal scars.

 W. T. S.

Adrenalin in Glaucoma.

TREUTLER, (Wochenschrift für Therapie und Hygiene des Auges, March 2d, 1905,) reports a case of recurrent rheumatic iritis, with almost complete ring form synechia, which improved rapidly under sweating, aspirin, heurteloupe, scopolamin and suprarenal extract. As a matter of experiment the suprarenal extract was discontinued. The following day, one hour after scopolamin was used, the eye became acutely glaucomatous. Four hours later the tension was +2., the cornea was steamy, and there was severe frontal, alveolar and occipital pain.

One drop of suprarenal extract was instilled, which gave almost instant relief. Tension became normal, the injection subsided, and the pain left; the synechia remained unchanged. The case was successfully continued without the use of scopolamin, and with the careful application of suprarenalin.

Treutler considers this case as proving the claim of Wessely, based upon animal experimentation, as to the favorable action of suprarenal extract in cases of iritis with increased tension.

W. T. S.

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Relationship Between Diseases of the Teeth and Diseases of the Eye.

GREVE, MUECHEN, (Reichs. Med. Auz., No. 26. Ref. from Wochenschrift für Therapie und Hygiene des Auges, March 9th, 1905). Most frequently primary disease of the teeth, gives rise to ocular disturbances, and seldom do primary ocular diseases influence secondarily the teeth and their adnexa.

The way of transmission, is either through the blood or lymph channels, or reflexly through the cranial and sympathetic nerves. Different grades of caries, inflammation of the pulp, periostitis, periontilis, dental abscesses, cysts, and tumors, can in one way or another cause ocular disturbances. Swellings of the cheek and eyelids, and collateral edema of the conjunctiva are harmless.

More important, are septic processes which involve the retrobulbar tissues, and endanger life. Partial and complete amaurosis, strabismus, dilatation and contraction of the pupils, thrombosis of the central vein of the retina, retinal hemorrhages, lid abscesses, dascryocystitis, and optic atrophy have been noted as being secondary to septic dental disease.

Dental fistulæ can in very rare cases complicate lacrimal sac fistulæ.

Reflexly, irritation around the teeth, which may even be entirely painless, can give rise to strabismus, cataract, retinal affections, keratitis, etc. The oculomotor nerve may also be involved, either as paralysis or more rarely spastically.

Deficient accommodation, especially in young individuals, resulting from disease of the teeth is a phenomenon observed daily. As an example of the very rare occurrence of dental disturbance, due to ocular disease, are cited a case of toothache due to ocular muscle insufficiency (internal recti). It was only relieved by the correction of the muscle defect by prisms. Also a case of toothache occurring with rheumatic iritis. The toothache appeared and disappeared with the recurrent attacks of the iritis. In still another case persistent toothache disappeared after operation for existant glaucoma.

W. T. S.

Diplobacillus Conjunctivitis.

ERDMANN, (Rostock Medical Society. Ref. from Die Ophthalmologische Klinik, March 5th, 1905). Among 14,783 patients treated in 5 years, Erdmann observed 342 cases of diplobacillus conjunctivitis, or a percentage of 2.3. The percentage increased from 1.56 in 1900 to 3.02 in 1904.

Forty-two of the cases were children under 14 years of age, and 3 were children under 1 year. The disease was more frequent from June to August. A mixed infection with the penumococcus occurred in one case; 13 cases were complicated with trachoma and 10 with phlyctenulæ.

Corneal ulceration and infiltration, mostly marginal were present in 30 cases.

Among 8 cases of marginal ulcer, the diplobacillus was found in the ulcer six times. Typical ulcus serpens from the pneumococcus occurred in two cases of diplobacillus conjunctivitis.

Erdmann experimented to determine the practical question as to how long the diplobacillus in the conjunctival secretion which had dried upon towels, etc., remained active in culture. He found that the diplobacillus in dried conjunctival secretion, at ordinary room temperature, remained infectious for days and weeks (maximum two weeks), but at a temperature of 96.8° F. it remained infectious but four days. The virulence was tested by inoculations. Inoculation from secretion which had dried at room temperature for 25 hours produced in the normal conjunctival sac typical diplobacillus catarrh. Similar experiments with secretion dried for 52 hours were negative.

The diplobacillus can, and frequently does extend from the conjunctival sac into the nasal cavity. One hundred and forty-two cases were examined, in which the diplobacillus was absent in the conjunctival sac, but in 64 of them, the Morax-Axenfeld bacillus was found in the nasal secretion.

The diplobacillus can live a long time in the nasal secretion. After the conjunctivitis had healed, it was found in several cases weeks afterwards in the nose. The nasal mucous membrane was at times normal, and at times was the seat of chronic rhinitis.

W. T. S.

Complete Cure of Carcinoma of the Lacrimal Sac by the Röntgen Rays.

GINBERT and GUERITEAU, (Die Ophthalmologische Klinik, March 20th, 1905). The authors report the complete cure of this case after seven applications of the rays. The growth was well advanced, vascular and painful; operative interference was considered inexpedient. No ulceration, adhesions or induration remained. There was no sign of recurrence after six months.

W. T. S.

Hysterical Nystagmus.

FERNANDEZ, J. SANTOS (Die Ophthalmologische Klinik, April 5th, 1905). Nystagmus is usually observed in congenital defects of the eyes, like microphthalmus, coloboma of the chorioid and optic nerve, albinism, congenital cataract, early formed corneal opacities, etc. It is the general belief that the underlying cause of nystagmus is not to be found in the peripheral visual organs, but in some functional disturbance of the nervous centres.

Nystagmus may also be acquired and idiopathic. Occupation nystagmus is well known. Frequently is nystagmus a symptom of disease of the nervous system, such as multiple sclerosis, encephalitis in children, focal lesions in the visual centres, in the fourth ventricle and in the cerebellum. Merkel has seen nystagmus in the death agony, during the stage of Cheyne-Stokes respiration. Hysterical nystagmus is rare, and is by some not recognized as a variety.

Fernandez reports such a case occurring in a 40-year-old woman, who had previously enjoyed good health. After an attack of anger, she had a fainting spell, diagnosed as hysterical hemiplegia. Immediately following the attack the nystagmus was noticed and was more marked in O. S. Ophthalmoscopic examination was, except for small posterior staphyloma and a myopia of 3. D., normal. After four years, the nystagmus although much improved, had not entirely disappeared. (Just why this case was necessarily of hysterical origin is not quite clear).

W. T. S.

A Case of Hysterical Nystagmus.

Delnewville, E., (Die Ophthalmologische Klinik, April 5th, 1905). Delnewville reports the case of a girl 26 years old with ocular disturbances of six weeks' duration. The patient complained most of diplopia. Objectively, there was strabismus convergens of O.D. and nystagmus. She had chlorosis. The symptoms varied in intensity; the strabismus appeared mostly when tests were made for diplopia. The diplopia was homonymous, and increasing toward the right. Nystagmus was always present, but more marked when the patient was tired.

Later, the patient complained of seeing only the left half of a word when reading, while the other half was indistinctly seen. The fields showed homonymous hemianopsia. No organic disease could be found. Under suitable general treatment, complete recovery took place within a few weeks.

W. T. S.

Mikulicz's Disease.

Pollack, (Ref. from Die Ophthalmologische Klinik, April 5th, 1905). Pollack presented before the Berliner Ophthal. Gesellschaft, a case with the symptom complex of symmetrical enlargement of the lacrimal glands, the parotids, the sublingual, and the sub-maxillary glands. The cause of this rare disease is not well understood. In the majority of cases it is in combination with pseudo-leukemia.

Pollack's case was a 46-year-old woman suffering from general weakness and frequent hemorrhages. The first symptom noted was narrowing of the palpebral fissure from swelling within the orbit. At first this was unilateral. A small tumor was removed from the orbit, and microscopically pronounced benign. There was prompt recurrence, followed by the appearance of a growth within the other orbit.

A second operation gave similar microscopic findings. Cells resembling giant cells were found, which made apropos, the question, if perhaps the disease was in some way related to tuberculosis. Then followed swelling of the parotids and other glands completing the picture of Mikulicz's disease.

W. T. S.

Practical Points.

SCHUBERT, (Die Ophthalmologische Klinik, April 5th, 1905). Under this heading, among other suggestions Schubert calls attention to the following prescription which will remove the stains of nitrate of silver from the fingers or other objects with which it has come in contact.

2/ Sublimat.

Potass bromat. aa 1.—Aq. dest q. s. ad. 50.—

W. T. S.

Bilateral Gonorrheal Iritis.

BAYLAC, (Die Ophthalmologische Klinik, April 20th, 1905). The patient, a 20-year-old waiter, had iritis in both eyes, multiple joint involvement, functional heart disturbance, and slight pleuritic symptoms in the course of an attack of gonorrhea. The father died of rheumatic endocarditis, and an uncle of chronic joint rheumatism. Prior to the gonorrhea, the patient had always been healthy, and had never experienced any signs of rheumatism or neuralgia.

Fourteen days after the outbreak of the gonorrhea there was metastatic inflammation in the joints. Two weeks later there was acute iritis, O.S., which progressed favorably under treatment for 11 days, when there was a recurrence, accompanied with a similar attack in O.D. Final recovery of both eyes was perfect. Baylac believes that the hereditary tendency in the patient to rheumatic affections, produced a favorable ground for the rather extensive metastatic phenomena in the case

W. T. S.

Bilateral Congenital Abducens Paralysis.

MENDEL, (Die Ophthalmologische Klinik, April 20th, 1905). Mendel exhibited before the Berliner Ophthalmologische Gesellschaft a 9-year-old boy, who had had since birth, a pronounced convergent strabismus. Neither eyeball could be carried beyond the median line outward. He had diplopia; the fundus of each eye was normal. Vision was ½.

Tenotomy of the left internal rectus improved the diplopia. The diagnosis was bilateral absence of Moebius' nucleus. V. Michel mentioned a case in which there was absence of the nuclus for the internal eye muscles, a condition more rare than the preceeding. W. T. S.

Metastatic Carcinoma of the Chorioid.

POLLOCK. (Die Ophthalmologische Klinik, April 20, 1905). Pollock's case was a man who had been operated upon 18 months before for a primary carcinoma of the breast. After operation he suffered a number of recurrences and metastases, one mestastatic growth attacking the cauda equina.

There were in literature thirty cases of metastatic carcinoma of the chorioid, reported. In most of the cases the primary growth was in the breast, and almost all of the cases were females.

The metastatic choriodal growth is generally at the posterior pole of the eyeball; in Pollack's case it was in the periphery of the chorioid. Enucleation was not advised.

W. T. S.

A Case of Respiratory Pupillary Reaction.

WIESINGER. (Die Ophthalmologische Klinik, April 20, 1905). The patient was a 60-year-old female with paralysis agitans, and left sided sympathetic paralysis. The pupil was fixed, small, and had the form of a vertical slit. During every inspiration, there was a perceptible dilation of the pupil in its smaller transverse diameter. The exact significance of the phenomenon is not given. Rock has reported a similar case of respiratory hippus.

W. T. S.

Tumors of the Optic Papilla.

VON MICHEL. (Die Ophthalmologische Klinik, April 20, 1905). Patient was a boy 9 years old. Ophthalmoscopically was to be seen a white elevation of the papilla extending 2-3 mm., into the vitreous. No vessels were seen on the sur-

face, except at the periphery, where there were a few capillaries. The macula was normal. Later there was exophthalmus due to a retro-bulbar tumor; vision was reduced to hand movement, and the eye was enucleated.

Microscopically, the tumor was a fibroma originating in the vessel canal of the optic nerve, and involving the inner layers of the retina which were thrown into folds surrounding the disk

W. T. S.

The Kroenlein Operation.

Helbronn, (Die Ophthalmologische Kilnik, April 20, 1905). The technique is not difficult, complications are rare; exenteration of the orbit is, by this method easily accomplished, and without the danger of bone necrosis. Paralysis of the eye muscles often follows the operation, even when the affected nerves do not lie within the zone of interference; ptosis results in most all of the cases, but recovery takes place in about 80% without operative interference. In 117 collected cases, the bone resection, with one exception, healed perfetly.

Necrosis of the eyeball occurred twice. The operation was performed for dermoids, malignant retro-bulbar tumors, myx-osarcoma, endothelioma, pulsating exophthalmus, optic nerve tumors, and for tumor of the lacrimal gland. On the other hand, the operation is not recommended for rapidly growing sarcoma, for foreign bodies behind the eyeball which Helbronn says can scarcely ever be found, or for retro-bulbar phlegmon. Occasionally, the operation is indicated for diagnostic purposes.

Helbronn has followed 11 cases in V. Michel's clinic. One was for dermoid of the orbit, one carcinoma, three retro-bulbar sarcoma, five tumors of the optic nerve and sheath, and one for suspected tumor. The three retro-bulbar sarcomata gave unfavorable results. Recurrence and metastasis rapidly followed. The other cases were more or less successful.

W. T. S.

Adaptation Disturbance in Night Blindness.

Heinrichsdorff, (Die Ophthalmologische Klinik, April 20, 1905). Adaptation varies greatly in normal eyes; the endlight sensitiveness, can be 1500-8000 times greater than the beginning light sensitiveness. An absolute measure for light sense in night blindness cannot be obtained. Comparison with other sound eyes, or with previous data must be made. There is in night blindness, however, a marked difference in the

adaptation curve, even when the light sense does not vary much from the normal. The characteristic variation in the adaptation curve consists of a delay in the first rise, or, after the rise there is a long exhaustion pause, after which the adaptation is the same as in normal eyes (50 minutes).

One of the pathognomonic signs of disease of the rods and cones, which is always demonstrable, but generally overlooked is the ring scotoma. In a bright light it is found perimetrically as a partial defect; as the illumnination is reduced, it becomes complete.

Hirschberg considers the ring scotoma the first sign of night blindness in pigment degeneration of the retina. In one case he found ring scotoma in the family of a patient with retinitis pigmentosa, the patient believing until then, that the eyes were perfectly normal. He advises therefore, that when a case of retinitis pigmentosa is found, the eyes of the other members of the family be carefully examined. W. T. S.

Changes in the Visuai Nervous System in a Case of Brain Tumor.

SCHUTZ-ZEHDEN, (Die Ophthalmologische Klinik, April 20, 1905). The authors demonstrated macroscopic and microscopic preparations of a brain tumor from a patient who in life showed simply atrophy without signs of inflammation in the right eye, and choked disk in the left. Autopsy revealed a cholesteatoma occupying the anterior and middle fossae.

The tumor pressed upon the right optic nerve and chiasm, involved the corpus geniculatum and the thalamus, and distended the lateral ventricle.

W. T. S.

Amyloid Degeneration of the Ocular Vessels.

VON MICHEL. (Die Ophthalmologische Klinik, April 20, 1905). Although disease of the ocular vessel walls is frequent, amyloid degeneration of them is seldom observed. In general medicine three forms of this degeneration are recognized: the amyloid tumor, local amyloid deposits in the bones, and general amyloid degeneration.

Three forms can also be differentiated in the eye; tumor of the lids, amyloid deposit in the cornea and vitreous, and amyloid degeneration of the vessels. The lid tumors usually arise from the sub-tarsal and tarsal tissues. The degeneration in the cornea can be experimentally produced and is found also in splenic fever infection, and in the scars of phthisical eyeballs. It has not yet been observed in general amyloid degeneration. In the vitreous, amyloid changes are found

after hemorrhages. In the choriodal vessels, and especially in their extra-bulbar course, it has been found complicating parenchymatous nephritis. Michel had the opportunity of examining microscopically such a case. The amyloid changes were found; First; In the central retinal artery and its branches. In one artery, besides affecting the intima, the muscular coat was also involved. Second; In the chorio-cappillaris; in the pial sheath of the nerve, and on the inner surface of the hyaloid membrane.

In the chorio-capillaris, the amyloid degeneration was in combination with endarteritis proliferans, which was found also in the chorioid and retina.

W. T. S.

Innervation of the Stroma Celis of the Iris.

MUENCH. (Die Ophthalmologische Klinik, April 20, 1905). Münch used the following method. Formol or sublimate fixation, and paraffin imbedding. After this, fifteen minutes in ammonia spirits, then fifteen minutes in phosphormolybdamic acid, and again in the ammonia, and in the latter stained with methyl violet, and then washed.

The stroma cells are black, and the nerve cells and their processes are stained blue. The other tissues remains unstained. Münch demonstrated, that beneath the stroma cells, which he considers of a muscular nature, were cells which had hitherto been regarded as indifferent connective tissue cells. These cells are ganglion cells. These ganglion cells surround the stroma cells like snail shells surround snails. The nerve plexus is in relation with the stroma cells. W. T. S.

Jeguiritol.

SEFFELDER. (Klinische Monatsblätter für Augenheilkunde, March, 1905). Seefelder studied the effects of jequiritol upon 29 eyes in 21 persons. Solutions of four different strengths were used. The weaker solutions only exceptionally produced a marked reaction. Solution 3, generally produced when the conjunctiva was intact, "typical ophthalmia." Solution 4, even failed at times to produce typical ophthalmia, when the conjunctiva was cicatrical.

Treatment was commenced with the weaker solutions, and rapidly carried to the stronger solutions. No surprises or undue reaction resulted in any of the eyes treated.

The eyes treated were divided into three groups:

1st—Corneal scars resulting from trachoma.

2nd-Interstitial keratitis.

3rd—Corneal opacities due to trachoma, and pannus trachomatosus.

Seefelder's conclusions are:

1st—Jequiritol should, when possible only be used in house cases. Exceptionally can it be used, in ambulatory cases. Its use simultaneously in both eyes is a question upon which the author remains non-committal.

2nd—Reliable and constant dosage, the author has found to be possible beyond a doubt. Individual variations in the reaction obtained are of course frequent.

3rd—That jequiritol is absolutely without danger as claimed by some, cannot be accepted, as dacryocystitis and corneal ulceration can result after its most careful application.

4th—It is contra-indicted in disease of the lacrimal passages, and in corneal abscess, or corneal processes tending toward abscess formation.

5th—The clinical value of jequiritol serum has not yet been determined.

6th—The duration of treatment is dependent upon the number of preceding attacks of ophthalmia, and the resulting complications. By a smooth course, an average of eight days is required for the treatment of an attack of ophthalmia.

7th—Immunity seldom seems to occur within the first three weeks of use.

8th—An intense ophthalmia gives a better result than a mild reaction, although the latter can end the case successfully.

9th—The use of weak solutions in chronic catarrhal conjunctivitis, as first advised by Copply is not recommended.

10th—The influence of jequiritol upon the trachoma follicle is not conclusive.

11th—The power of jequiritol to clear corneal opacities is undoubted, and is one of its most useful properties. It must however, only be used after other means have failed, and when the indication is a pronounced one.

12th—The duration of interstitial keratitis is not shortened by jequiritol.

13th—The only unrestricted indication for jequiritol is old trachomatous pannus. In early acute pannus it has caused harm.

W. T. S.

The Operation for Total Symblepharon of Both Lids.

GRUNERT. (Klinische Monatsblätter für Augenheilkunde, March, 1905). Grunert discusses the various operations for this deformity, and reports in full 4 cases operated upon

with most excellent results, in that the patients could all wear an artificial eye with satisfaction. Cases 1 and 3 were operated upon by the old method of attached flap transplantation, from which the author concludes that this method which has been almost completely discarded, is applicable not only for the making of a new conjunctival sac, but for enlarging one which is too small

The newer method of skin grafting, was practiced in 3 cases. One case which was attempted 8 months after the injury, required further operation because complete contraction had not taken place in the scar tissues.

Grunert recommends that a longer time intervene between extensive injury and a plastic operation of this kind.

Fornix Construction, with Supported Skin Grafts.

GULLSTRAND. (Klinische Monatsblätter für Augenheilkunde, March 1905). Gullstand's operation is a modification of May's operation in which the skin grafts are supported and held in place without stitches. He also describes an operation for total symblepharon upon the same principle, in cases possessing a seeing eye. These cases are reported. W. T. S.

The Pathogenesis of Cataract.

LEBER. (Klinische Monatsblätter für Augenheilkunde, March, 1905). In this very lengthy article, Leber makes an able defense of certain criticisms made by Peters in a contribution concerning the pathology of the lens, which appeared in the Klinische Monatsblätter für Augenheilkunde, Vol. XLII, No. 2.

W. T. S.

Experimental Investigation Upon the Absorbing Powers of Dionin.

McKee. (Klinische Monatsblütter für Augenheilkunde, March 1905). McKee injected india ink into the anterior chamber of each eye in different animals, and using dionin in one eye only, noted the comparative results of treatment. He also studied the conjunctival reaction, as produced by dionin in the different animals. The animals used were the dog, the cat, and the rabbit.

He found that a 10% solution of dionin did not produce in the rabbit, the well known chemosis, whereas in the cat. the reaction was very marked and attended with salivation. In the dog a moderate chemosis was produced, which gradually diminished by repeated instillations. The chemosis, however, persisted for a longer time after repeated use of dionin in the dog than it does in man. In the rabbit, dionin did not perceptibly influence the absorption of india ink from the anterior chamber. In the dog and cat the absorption from the anterior chamber was markedly hastened in the eye treated with dionin.

McKee showed experimentally that in the dog, deep corneal opacities produced by lesion of the endothelium and chemical irritation, were more quickly resolved in the dionin eve.

The production of chemosis would seem to be an index to the absorption powers of diomin. McKee's experiments have convinced him that dionin is a very valuable drug, and he agrees with Wolffberg and Darier in that it should have a more extended application.

W. T. S.

Peripheral Ectasia of the Cornea.

LAUBER, HANS. (Klinische Monatsblätter für Augenheilkunde, March 1905). Lauber reports 3 cases of marginal ectasia of the cornea which differ in some ways from the cases reported by Fuchs and Terrier.

Fuchs considered his cases to be of inflammatory nature. The commencement of the process he believed to be senile changes, starting in an unusual development of the arcus senilis. Terrier also considered his case of inflammatory origin.

In none of Lauber's cases was there arcus senilis, and the grooving of the corneal margin so prominent in Fuch's cases, and in the severe ones encircling the entire cornea, was in his cases scarcely noticeable. Furthermore, in one of Lauber's cases there was an extensive, superficial layer of vessel formation which was absent in Terrier's case.

So far as known, the disease is a chronic process attacking the corneal margin, very slowly progressive, and probably of inflammatory origin. In the cases thus far reported the ectasia has always been at the upper margin of the cornea. It produces a high grade astigmatism which greatly diminishes vision.

Karl Frank in his Inaugural Dissertation in 1896 reported 4 cases of chronic peripheral furrow or groove keratitis (Schmidt-Rimpler) which correspond with Lauber's cases. In one of the cases, there was inflammatory infiltration, at the corneal margin which terminated in ectasia, the keratitis marginalis superficialis of Fuchs.

W. T. S.

A Case of Chronic Dacryo-Adenitis, Treated and Cured by Vibration Massage.

DREYFUSS. (Muencher Medizin. Wochenschrift, January 10th, 1905). The patient was a boy 13-years-old, who, had noticed for three weeks previous to consultation, a progressive thickening of both upper eyelids. Both glands were enlarged, non-inflammatory and without pain. The other head glands were normal. The tumors were treated 3 times a week for 5 minutes each time, by electrical vibration massage. From the commencement of this treatment the glands rapidly diminished in size until they became normal in about 2 months.

The explanation of the treatment lies in the molecular vibration, and the very rapid change from vessel compression to dilation and vice versa (3000 times per minute).

Dreyfuss recommends that electrical vibration massage be tried in all cases of indifferent hypertrophy and tumor, in which there is no contra-indiction.

W. T. S.

The Wandering In, and Spontaneous Delivery of Foreign Bodies From the Eye.

GESANG, B. (Wiener Klinische Wochenschrift, February 2d, 1905). The statistics of several authors give the percentage of foreign body injuries in relation to general eve traumatisms, as from 45 to 56%. The vast majority of such injuries occur in industrial pursuits. The depth of penetration depends upon the propulsive force of the foreign body. In Prof. Haab's clinic, among 1762 foreign body injuries, the foreign body remained in the conjunctiva in 16.91%; in the cornea in 74.68%; in the sclera in .45%; in the anterior chamber in .39%; in the iris in .56%; in the lens in .75%; and in the vitreous, including the retina in 6.01% of the cases. In only 8% was the injury perforating. In general, perforating foreign bodies give a favorable prognosis provided they are not septic, and if when removed no particles remain behind.

The tolerance of the eye to foreign bodies has been experimentally studied by Leber and his pupils. It was found that with aseptic bodies, the fate of the eyeball depends first upon the chemical nature and the position of the foreign body.

Gold and platinum introduced into the anterior chamber caused much less irritation when in one piece, than when in fine particles (gold dust). Gold, platinum, silver, graphite, and glass can remain for years in the eye without causing irritation.

They are therefore considered chemically indifferent. Iron and copper, on the other hand, are not chemically indifferent. Leber found that iron in the anterior chamber of an animal's eye, caused very little irritation, but in the vitreous gave rise to acute shrinking of the vitreous with atrophy and detachment of the retina. Still more serious was the action of copper, which always caused suppuration as soon as it came in contact with the vascular membranes of the eye. In the vitreous, like iron, it causes shrinking of the vitreous, and retinal detachment. In the lens both iron and copper were well tolerated, on account of a richly albuminous capsule which was formed and prevented diffusion.

The investigations of Franke and Kostenitsch coincide mostly with those of Leber upon animal eyes. A difference however, is noted in the effect of iron in the anterior chamber of the human eye. In half of their cases, iron in the anterior chamber caused a reaction quite as intense as did copper. The fibrinous capsule formed around chemically indifferent foreigh bodies is very delicate, and only to be recognized microscopically. Around foreign bodies which cause active inflammation, however, there is a proliferation of pre-existing connective tissue cells and active exudation.

Encapsulation took place more quickly, the more fulminating the inflammation was, and prevented further chemical action of the foreign body upon the ocular tissues. Not identical, but serving the same purpose is the incrustation of foreign bodies.

The surface of not indifferent, oxidizable metallic bodies become covered with an insoluable coating composed of a combination of inorganic or organic substance with the exudative products of the surrounding tissues.

In this way aseptic bodies even though not chemically indifferent can remain in the eyeball for a long time without causing irritation.

Foreign bodies which have entered the eye can wander from their primary positions and spontaneously work their way out. The change of position may be a sudden one, or may take place very slowly. Berlin considers three factors as important in causing this change of position. First, gravity; second, detachment of the retina; and third, contraction of exudates or cicatrices. Gravity can only act when the foreign body is loose in the anterior chamber or vitreous. Denig observed a foreign body which, after remaining 4 weeks

loosely in the retina near the macula, sunk to the floor of the vitreous chamber.

Encapsulated and firmly fixed bodies, are changed in their positions by the contraction of the detached retina or by connective tissue strands in the vitreous. Foreign bodies which have remained quiescent in their original position, can be, in this way drawn into the vascular tunics of the eye, and there, if not chemically indifferent cause an active inflammation

Besides these three methods of translation as described by Berlin, other factors are of favorable influence. There are cases which cannot be explained by these three methods alone. Two cases are reported in which foreign bodies within the eye underwent change of position. In one case a piece of iron had remained quiescent in the posterior portion of the eye for 10 years. After this lapse of time, the eye received a blow from a large piece of iron, which caused the foreign body to change its position and pass forward through the lens and into the anterior chamber, from which place it was recovered by operation.

In the second case an eye sustained an injury from a knife blade; there was iris prolapse, and two cilia were carried into the anterior chamber. These cilia underwent considerable change in position, which Gesang believes, was due to the action of the iris, (pupilliary contraction and dilation) and to movements in the aqueous humor.

Still more remarkable, is the spontaneous delivery from the eyeball of foreign bodies which have for a long time remained without causing irritation. The first case of this kind was reported by Castelman in 1842. A number of cases have since been recorded. The foreign bodies were in most cases copper, and in a few cases iron or stone. Only one case of spontaneous delivery of chemical indifferent substance had been reported. The point of exit was in nearly all of the cases in the cicatrical tissue surrounding the point of entrance. The time between entrance and exit varied from a few weeks to twenty years. Vision was in most cases destroyed; in three cases only did it remain useful.

Gesang reports two cases of spontaneous delivery. One was a piece of copper 3x1-1/2mm,, which entered an eyeball 4 years before. The second case was a piece of iron 5x2-1/2x1 mm., which entered the eyeball twenty years before and remained until 18 months before it presented itself pushing through the sclera.

According to Leber, the spontaneous exit of a foreign body from an eyeball depends upon connective tissue proliferation, intra-ocular pressure, and an inflammatory softening of the coats of the eyeball, due to a leucocyte ferment. Gesang concludes that the principal feature in this phenomenon is the contraction of the connective tissue following the original injury. In some cases preceding the exit there is a secondary chemical or bacterial inflammation set up.

The Etiology of Spring Catarrh.

DIMMER. (Wiener Klinische Wochenschrift, January 12th, 1905). Spring catarrh is always bilateral, persists generally through a number of years, and finally disappears without leaving any special sequellae. The marginal corneal opacity seems to remain stationary. In very rare cases the entire cornea is covered by the proliferation, and in these cases the prognosis is bad, as the cornea will remain cloudy. Spring catarrh occurs more frequently in males, and belongs essentially to youth. Among 29 cases recorded by Emmert, 19 were in patients between the ages of 7 and 17 years; 6 between the ages of 17 and 25; 1 was 32 years old; 1 was 45 years old; and 1, 51 years old. Knus found 85% of 64 cases in males, and more than half of them were in patients from 11 to 20 years old

The disease was recognized by Graefe, but was first properly described by Saemisch. Uhthoff, Tailor and Raabe considered the underlying anatomical process a proliferation of enithelial cells, while Reymond, Birkhardt and Segers believed the primary change to be an overgrowth of connective tissue, and the epithelial proliferation to be secondary to it. Scheele considered the change as affecting primarily the adenoid tissue of the conjunctiva. Schöbl explained spring catarrh as a simple hyperplastic inflammation of the conjunctiva. Michel described the disease as a follicle proliferation of the scleral conjunctiva. Schieck, the most recent observer, believes that the principal anatomical change in spring catarrh is an overgrowth of the elastic fibres of the conjunctiva, and has found similar changes in the elastic fibres of the tarsus. The etiology of the disease has, through all this investigation remained in Saemisch could not establish any relationship to darkness. general disease. Knus, considers the disease mycotic, without however, being able to prove it. Michel, who regards spring catarrh as a follicle formation of the scleral conjunctiva speaks also of a polyadenitis universalis, but can give no cause for such a general disease of the lymph gland system. In many cases, hereditary syphilis seemed to play a role. Coneteaux, Trousseau and Tetau found a relationship between spring catarrh and adenoid growths of the nasopharynx, but many other observers could find no connection. Angelucci found, almost without exception, that patients with spring catarrh were of an irritable choleric temperament, with quick tempers, psychic irritability, tachycardia, etc. Bellinzona alone found in the deeper layers of the affected conjunctiva punctiform colonies of large bacilli which grew on gelatin. Holmes Spicer considers the disease a multiple fibromatosis. Dobritz noted, that accompanying spring catarrh, there was always skin disease in the form of eczema of the hands, feet, cheeks, ears, and nose. The cczema appeared with the eye affection and later disappeared.

Dimmer calls attention to the important contribution of Karl Kreibich from the dermatological clinic in Gratz, upon cases of hydroa vacinniforme (Bazin) and summer prurigo (Hutchinson) which were caused by sunlight.

In 3 cases of the latter disease changes were found in the bulbar conjunctiva, which must be considered as corresponding to those found in spring catarrh. There were no changes in the tarsal conjuntiva. Kreibich cured the conjunctival disease in these three cases in a short time by the application of an occlusive bandage. He concluded that spring catarrh was caused by sunlight, and thus explained the well known facts that it always affected both eyes, that the changes correspond mostly to the portion lying in the palpebral fissure, and the most prominent parts of the eyeball, that recurrences occur in warm weather, and that protection from light gives beneficial results.

Regarding the special rays which produce the conjunctival disturbance Dimmer thinks that they are probably the short undulation visible rays, and the ultra-violet (invisible) rays. Ultra-violet rays can be excluded by glass of unusual thickness. Blue rays can be excluded by yellow glasses.

Birch-Hirschfeld after experimenting reached the conclusion that both the ultra-violet and the blue rays can be excluded practically by smoke gray glasses.

In view of these most recent investigations which seem to show that the principal role anatomically in spring catarrh is played by the elastic tissue fibres, Dimmer makes a suggestion as to pinguecula. Pinguecula consists mostly of elastic tissue, and Dimmer asks if it could not be produced by light rays.

rather than by exposure to wind, dust, etc., as is usually believed to be the case. W. T. S.

A Case of Sympathetic Retrobulbar Neuritis.

CONSIGLIO. (Beiträge zur Augenheilkunde, May 1905). The patient had been the victim of a dynamite explosion, which severely injured both eyes, face and hands. The left eye was totally destroyed, and the vision of the right eye gradually failed. Five weeks after the accident the following conditions were noted:

The region surrounding the left orbit was sunken, the left eyeball was shrunken and deformed; the cornea was scarred, and contained a countless number of small particles of stone; the anterior chamber was deeper than normal; the pupil was difficult to see, and the edge of the iris was caught in a corneal cicatrix.

The iris itself contained several small pieces of stone. The eveball was soft. The right eve was free from injection. There was a corneal scar near the limbus above. Small particles of stone were imbedded in the cornea, between which the cornea was clear. The anterior chamber was of normal depth, the iris structure was well seen, and the pupil reacted to light. The lens was clear, and the vitreous contained four pieces of stone, and numerous dust like opacities. illa was perhaps pale, but the fundus was otherwise normal. Vision was reduced to the counting of fingers: colors were not recognized. The field for hand movement was contracted up and out. The left eye was enucleated and carefully studied. The right eye was treated by sub-conjunctival injection of strychnia, and galvanization. Vision improved but little The contracted field remained. (counting fingers at 3 M). and a small central scotoma for all colors was found.

A full description of the enucleated eye is given. Especially notable were the changes in the papilla, which showed an edematous infiltration, and projected 1 mm. forward. Behind the lamina, the nuclei of the neuroglia cells were increased in number. The nerve sheaths were normal. Infiltration of the chorioid which Schirmer and others describe as characteristic of sympathetic ophthalmia was not found, nor was there infiltration of the trunk of the optic nerve.

In that the characteristic changes of the sympathetic eye were not present in O. S., Consiglio wishes to determine if the changes found in O. D. were of a sympathetic nature, or due rather to the injuries which this eye received. There were foreign bodies in the iris and vitreous of O. D., and it is pos-

sible that the nerve and retina were also injured, but the ophthalmoscopic findings, and the form of visual disturbances oppose such a theory.

Consiglio considers it probable that the case is one of sympathetic retrobulbar from the left eye occurred in the same way the inflammation from the left eye occurred in the same way as it does in sympathetic papillitis, several cases of which have been definitely established.

Schirmer believes that sympathetic neuritis is caused by the toxins produced the wounded and inflamed eye. The method of transferrence is not however definitely known.

In literature, Consiglio has found but one other case of sympathetic retrobulbar neuritis. This case, reported by Rosenmayer occurred in a laborer who was struck in the eye by a piece of steel which entered the vitreous and caused a suppurative inflammation with complete amaurosis. The fellow eye suffered diminution of vision, contraction of field and atrophy of the disk in its temporal quadrant.

An Unusually Long Interval Between the Appearance of Parenchymatous Keratitis in the Right and the Left Eye.

Consiglio reports the case of a 44-year-old patient, with an attack of parenchymatous keratitis, right eye. The left had suffered a similar attack 26 years before, and the cornea showed the signs of the previous inflammation. The patient was of good heredity and until 18 years old, the time of the first attack, had been perfectly healthy. The etiology could not be determined.

That the underlying cause was constitutional is probable because both eyes were affected. There were no signs of acquired syphilis, tuberculosis or scrofula, and as hereditary syphilis is the cause of the majority of these cases, it must be thought of as the cause of this case.

Keratitis of hereditary syphilitic origin attacks as a rule both eyes, and frequently not at the same time. The interval is from one to several years, but a twenty-six year interval as yet stands alone.

W. T. S.

The Etiology of Crupous Conjunctivitis.

CHRIST, WILHELM. (Beiträge sur Augenheilkunde, May 1905). Much controversy has existed concerning the status of membranous conjunctivitis, and its relation to true diphtheria. A number of authors opposed in their views to Säm-

isch, who most recently has concluded that pseudo-membranous conjunctivitis is an independent diseased process. fail to recognize it as such. Bach. Vossius, Uhthoff, Stephenson and Jessop, regard as conclusive evidence in the differential diagnosis between croup, and genuine diphtheria of the conjunctiva, not the clinical picture, but the bacteriological findings. The presence of virulent diphtheria bacilli according to these authors, determines diphtheria of the conjunctiva, and their absence, diagnoses the case pseudo-memconjunctivitis. The clinical aspect of diphtheria was well known long before the discovery of the Klebs-Löffler bacillus, and characterized was necrosis of the mucosa, and virulent diphtheria bacilli are found in superficial as well as in deep penetrating membranous conjunctivitis, and also in catarrhal inflammation. The typical clinical picture of diphtheria furthermore is not alone produced by the Klebs-Löffler bacillus, but can also be produced by the streptococcus. the pneumococcus, and the staphylococcus.

The Klebs-Löffler bacillus cannot be considered as capable of alone producing a characteristic disease process, and in diagnosis, its presence is not pathognomonic. Bacteriologically it would be very difficult to sharply differentiate those cases in which were found diphtheria bacilli, and numerous other pathogenic micro-organisms also capable of producing pseudomembranous inflammation.

Such a differentiation might be practical if it could be confirmed therapeutically, but here also it is found that anti-diphtheritic serum has a favorable action upon pseudo-membranous inflammation not produced by the Klebs-Löffler bacillus, as well as upon true diphtheritic inflammation.

Furthermore, it is a question, if it does not influence the croupous form just as favorably as it does the diphtheritic conjunctivitis.

Christ believes that a separation of these cases into bacterial forms is not possible at the present time, but that they can be well differentiated clinically. Five cases of croupous conjunctivitis are reported from which his conclusions are drawn.

In one of the cases were observations made before the process had progressed to membrane formation. Characteristic of all were marked edematous swelling of the lids, and light vivid discoloration of the upper lids; the eyeball could only be exposed with difficulty. The infiltration was relatively soft, and the lids could always be everted.

The membrane covered the entire conjunctival surface of both lids in 3 cases; in 2 cases it was limited to the upper lids. In one case, fibrinous exudate was in the fornix, and removal caused considerable hemorrhage.

The bulbar conjunctiva remained free in all the cases. The membrane remained on an average 6-8 days, gradually disappeared, and was replaced by copious secretion. In half of the cases the cornea was involved, and in one case in which the preumococcus was the infection, the cornea was lost. The patients were all children, and in three of them the disease was limited to one eye.

Constitutional symptoms were always present. In most of the cases the preauricular glands were enlarged, and a greater or less amount of facial eczema appeared as a complication. Careful bacteriological examination was made in all cases; virulent Klebs-Löffler bacilli were only found in one case, but even in this case Christ considers that it did not justify the diagnosis of diphtheritic ophthalmia.

Bacteriologically he concludes that typical diphtheritic ophthalmia depends more upon the susceptibility of the infected tissue to that particular character of inflammation, than to the mere presence of virulent bacteria.

The cases were treated antiphlogistically and antiseptically. Cold compresses, frequent irrigation, and 2% protargol were used. As soon as the cornea became involved, the cold applications were changed for hot compresses and pilocarpin was instilled into the eye, provided there were no signs of iritis. Antidiphtheritic serum was used in 3 cases, owing to the severe constitutional symptoms, and acted favorably.

The prognosis of pseudo-membranous conjunctivitis is more favorable than that of genuine diphtheritic conjunctivitis, which generally causes disastrous results in the eye.

W. T. S.

ABSTRACTS FROM FRENCH OPHTHALMIC

BY

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Glaucoma and Scierotomy.

DIANOUX, Nantes, (Annales d'Ocul., Feb., 1905). In this article Dianoux first directs his arguments against Abadie, who recently in the Lucerne Congress had proclaimed the entire uselessness of sclerotomy in the treatment of glaucoma. In direct contrast to this Dianoux has entirely given up the operation of iridectomy, and now exclusively employs sclerotomy, both in acute and chronic cases. These diametrically opposite views Dianoux explains less by any real difference in the operative procedures, so much as by essential divergences in the after treatment.

The operation Dianoux carries out after the method of de Wecker. The pupil is contracted as much as is possible by eserin. A broad von Graefe knife is entered just in front of the iris-angle (the enlarged vessels of Schlemm's canal giving the point), carried across the chamber, and a corresponding counter-puncture is made. This should be carried out in such a way that about one-third of the corneal border is included. With slight to-and-fro movements the aqueous is allowed to escape. There follows still further contraction of the pupil, and this guarantees that with the further widening of the incisions there is little probability of the iris becoming incarcerated.

With this same to-and-fro movement both incisions are widened to about 3 mm. and then the knife is withdrawn. In this withdrawal the point is turned up, and a groove is cut along the inner surface of the sclera at the irido-corneal angle. During this procedure the point of the knife should bite so deeply into the sclera that it should shimmer through the conjunctiva (without, however, button-holing it).

Dianoux regards this as the best provision for continuing

filtration: but when one considers how strong the tendency of such incisions is to naturally drop into exact apposition. the certainty of a permanent filtration layer remaining, is not very great. Sooner or later an impervious condition is again produced and the result becomes only transitory. For this reason Dianoux considers the main reliance must be placed upon the after treatment: by massage and miotics. Even as early as 12 hours after the operation massage of the eye is commenced. The wound margins are made to gape a bit and the anterior chamber is emptied under the conjunctiva. This is repeated at 12-hour intervals up to the fourth or fifth day. according to the ease with which the wound may be opened. Along with this is employed a mixture of eserin, pilocarpin and cocain, to which of late adrenalin has been added. After a week the patient is discharged with instructions to use the miotic mixture; and (if intelligent) to carry out the massage at least twice a day.

With such after treatment not only do many patients retain what vision they possessed, but in some cases after several months there is even an improvement in vision and in the visual field.

ABADIE (Annales d'Ocul., March, 1905) replies to the above. reaffirming his position. He has only insisted that sclerotomy alone, without the adjunct of other teatment, is futile in giving durable results in glaucoma. He challenges its partisans to give permanent instances. Now Dianoux in advocating sclerotomy, places, however, great stress on regular massage, daily use of miotics, sedatives in small doses, the constant current, good general hygiene, relief from worry, etc. therefore, practically impossible to determine whether the sclerotomy or the treatment is to receive the credit. On the other hand it is well known that in the practice of many oculists, many cases of chronic glaucoma have given good satisfaction under miotics alone, without operative treatment. During the years prior to sclerotomy it is also perfectly well known that iridectomy gave good results in numerous cases of acute and chronic glaucoma, proving that iridectomy alone. has curative power. These three classes of facts give no warrant for supplanting the older operation by the newer one (even if easier). Rather the line of work should be iridectomy, aided by treatment; and the individual efforts should be directed towards accurately determining the indications for the operation, and carefully perfecting the technique.

Accidents Attributable to Adrenalin.

BOUCHART, Tours, (Recueil d'Ophtal. xxvii, p. 30, 1905), reports the case of a girl, aet. 20, with alternating squint; preferring the left eye. He operated upon the left eye, under a formal mixture (known as avasine) of 1% cocain and 1-1000 adrenalin in the proportion of 10:3. This mixture has a faint rose tinge, and is not perfectly clear, so that there is probably some other ingredient—presumably innocuous.

On the eighth day there was noted an infiltration of the cornea much like that sometimes following cataract operations. There was, however, no operation infection; the cornea was smooth, with normal reflex. The infiltration was interstitial; aqueous was clouded and vision was blurred. Pupil was dilated. Eserin was employed. On return from a two months' vacation (during which treatment was discontinued) the infiltration was found stationary, but with one sharply defined area of denser infiltration; pupil dilated ad maximum; iris dull and pale (like an old glaucoma), contrasting with the clear brown iris of the other side; aqueous clouded; and V=1/10. Tension normal.

Later neuralgic attacks occurred, and a bulla formed over the denser corneal infiltrated area. Eserin and dionin were used

The pupil became smaller, but remained irregular; the aqueous remained slightly clouded, and probably largely caused the dulled appearance of the iris.

The iris remained dull, and at its outer zone showed degenerative changes due to exudation. Vision remained poor.

The other eye was operated upon (about 5° convergence persisting) a week later, and under about the same methods. No ill result was noted in this eye. Wesseley, Takenontski and Galezowski have noted extreme mydriasis; and Reynolds has warned against corneal opacities.

The solution used for sterilizing (cyanure, 1-2000) could not possibly be held to be responsible.

Muscular Elongation: a New Operation on the Ocular Muscles.

Landolt, Paris, (Arch. d'Ophtal., Jan., 1905). The results which Landolt has secured in concomitant and paralytic squint by advancement as compared with tenotomy (even when combined with advancement of the antagonist) are so overwhelmingly in favor of the former that now his statistics will not show over one tenotomy to fifty advancements.

He regards it as astonishing that men should have formally determined upon the procedure, as a regular operation, of trying to remedy the weakness of one muscle by weakening its antagonist, for example: insufficiency of the interni by tenotomy of the externi. It would really be more logical to attempt to remedy spasm of convergence, from which the majority of cases of convergent, concomitant squints develop, by tenotomy of the antagonistic *interni!*

In addition to general reasons the poor cosmetic results speak in the same tone. Protrusion of the globe; the sinking of the caruncle; the primary good correction, later passing into over-correction and divergence; and finally even in cases with no divergence with distant vision, the tenotomy may disturb the convergence so necessary for binocular vision.

Landolt has demonstrated that at a variable time after the beginning of convergent squint the temporal excursion begins to become less; not only in the eye ordinarily converging, but also in the other as well. This diminished range of motion is due to weakened power in the externi.

All these reasons have led him to the correction of convergent squint upon the same principles as divergent squint; i. e., the advancement of the weakened muscle: in this case the externi. In suitable cases the effect of this may be strengthened by the excision of a greater or lesser bit of the muscle. In the greatest majority of cases this operation gives perfect results, especially in children. The squint is, and remains, cured; movement has normal amplitude in all directions and convergence is complete.

However, there occur cases of old concomitant or paralytic squint in which the decided contracture of the interni is associated with structural changes and loss of muscular elasticity. In such cases Landolt recommends an operation on these muscles as advisable. But as it is in these cases especially that the results of a tenotomy are often the most unsatisfactory, Landolt advises instead a lengthening of the muscle. He proceeds as follows: With the eye drawn by an assistant as far as possible to the opposite side, and the muscle put smoothly upon the stretch over a strabismus hook (of course after the usual preliminary incision) he makes a peculiar incision in the muscle. This is either step-shaped or beveled, and in the direction of the muscle surface: In the former he cuts down vertical to the muscle surface; then at right angles along the muscle strand, splitting it; then again at right angles he cuts

out below. The length of the split determining the amount of the lengthening. The bevel is backwards and its obliquity determines the lengthening. (Of course the posterior flap is first to be secured by a suture to keep it from slipping back out of sight). Then these tongue-like flaps (or these bevels) are to be slipped apart, and their tips only reunited by stitches. The strain had better be sustained by a "guy" suture.

The uneven surface resulting from this sliding and reunion, usually soon smooths off by retraction, or in the development of the cicatrix.

The advantage this method presents is, according to Landolt that the muscle retains better its power of rotation.

Intra-Ocular Irrigation in Cataract Operation.

LAGRANGE and AUBARET (Arch. d'Ophtal., Feb., 1905). The authors have accepted the principle that with the injection into the anterior chamber a simultaneous aspiration must be maintained. They have, therefore, adopted the instrument of Chibret, with some very excellent modifications by Aubaret, making the instrument more delicate and convenient. This syringe with double current produces the aspiration not by means of a special second cylinder, but by using the engine principle. As the piston is pushed down to produce the injection, the suction is made by and into the space that is thereby left above the piston. By this simplification the syringe has hardly the size, and not over the weight of our ordinary Anel syringe.

They use for irrigation fluid what they call a "humeur aqueuse artificielle:"

Sod. chlor	6.89
Calc. chlor	.113
Potass. sulph	.221
Agua	

Warmed before use to body temperature.

They explain the action of irrigation as follows: In a softish or half-ripe cataract the opening of the capsule by the cystitome or even its tearing by the capsule-forceps can never entirely remove the anterior capsule. With the removal of the body of the lens, the remainder of the anterior capsule sinks back upon the posterior capsule; with a varying quantity of soft, sticky lens substance between. This is not only difficult to remove, but is very slow to absorb. However, with the injection, this capsule-sac is filled out, the soft cortex

is loosened and washed away and even capsule-strips are brought out so that they may be seized and removed. Only the washing out of the capsule can secure this in an ideal manner, and do away with the unsatisfactory massage of the cornea with spoon or forceps—a manipulation that may result badly. The indications for irrigation are cases of swollen cataracts; cataracts with hypotony of the globe; and certain soft cataracts in which, notwithstanding complete opacity the central parts are not easily worked out. Such are found mainly in young people; and in older people particularly among the chorioiditic cataracts. In these it is strongly indicated; but it is imperative where one is compelled to operate in cases of unripe cataract, and in traumatic cataracts.

It is useful in half hard cataracts that extrude badly; in hemorrhage in the anterior chamber; in cataracta lactea of children; and in the myopia extractions.

It is contra-indicated in unruly patients who will not remain quiet; in increased tension; and above all where there are reasons to fear loss of vitreous.

Magnet-Extraction Without Cataract Following.

Morax (Soc. d'Oph. de Paris, Jan., 1905, Annales d'Ocul., T. cxxxiii, p. 122) reports the case of a young workman, aet. 20, with a minute bit of steel in the posterior third of the lens. The bit was drawn forward through the entrance wound in the anterior capsule of the lens, and into the anterior chamber by means of the giant magnet. Then by means of a keratotomy and the introduction of the smaller (hand) magnet into the anterior chamber it was drawn from the eye. It weighed hardly .5 mg.

The case is interesting and very unsual in one feature; notwithstanding that the lens was injured by the entrance of the foreign body (as well as to some extent in its removal) it had remained perfectly transparent for the nine months intervening.

Marked Example of Medullated Nerve-Fibres.

Antonelli, Paris, (Soc. d'Oph. de Paris, Feb., 1905,) reports the case of a girl, aet. 17, with most pronounced double-contoured nerve-fibres. The disc was entirely surrounded; the glistening white areas spread upwards, downwards and inwards quite to the equator; towards the macula they faded out. The fundus had quite the type of the rabbit eye. Eye

was amblyopic: with M.—2.00 V=0.1. The other eye was normal.

Such extensive areas of medullated fibres, entirely surrounding the disc are rare; but this case is interesting as showing that the macula is always preserved, notwithstanding the extent of the abnormal retina.

Exophthaimos and Neuritis from Sinusitis Maxillaris.

GALEZOWSKI (Soc. d'Oph. de Paris, Feb., 1905,) reports the case of a man aet. 55, with left sided sinus trouble from infection through a tooth. There was purulent discharge from the nose, and the ocular picture resembled an orbital phlegmon. The disc was edematous, the veins tortuous and the arteries

The sinus was trephined after the method of Luc. Four-teen days later the symptoms had all subsided; and V=1. narrowed. $V=\frac{1}{2}$: the visual field was normal.

Luxation of the Eyeball Into the Antrum and Nasal Cavity.

Kalt (Soc. d'Oph. de Paris, March, 1905,) presented the very interesting case of a stone-breaker who had been injured years before by the blow of a fragment of rock. There were extensive cicatrices; but the orbital border seemed not to have been fractured, and the lower lid was intact. The upper lid hung over the lower one. The orbital floor seemed to have been crushed in, for the eyeball was depressed to the level of the inferior orbital margin, and was covered by the lower lid. The globe was uninjured, and by very strongly dragging down the lower lid out of the way, the patient was able to read.

Traumatic Infection by an Anerobic Bacillus.

CHAILLONS (Soc. d'Oph. de Paris, April, 1905,) reports the case of a 14-year-old boy who came 60 hours after injury by a splinter of metal. There were already signs of beginning panophthalmitis, and enucleation was at once made.

The pus from the anterior chamber showed polynuclear leucocytes, and (Gram stain) bacilli about 7 micromillimetres in length. Aerobic culture proved negative but anerobic cultures gave results: bacillus perfringens. He reports this as worthy of record as an addition to the bacteriology of the eye.

Tenonitis and Atrophy after Influenza.

SOEDERLINK (Soc. d'Oph. de Paris, April, 1905,) reports the case of a woman, aet. 36, with mild case of influenza,

in which a double tenonitis set in. In the left eye the condition rapidly subsided and normal vision returned. In the right eye the lid edema increased, and restricted the movement of the globe. The ophthalmoscope showed a complete stasis of the papillary vessels, which continued fourteen days. Complete blindness existed, and atrophy of the temporal half of the papilla followed.

The author regarded the condition as due to compression of the nerve, by the infiltration into Tenon's capsule.

Transplantation of Rabbit's Eye to Improve Prothesis.

LAGRANGE (Bordeaux) reports to the Soc. Franc. d'Ophtulmologie the final results of his operations of transplanting the eyeball of the rabbit into the human capsule of Tenon. He detailed eight observations, with photographs in their support, of subjects operated upon for periods of 4½, 3, 2 and 1 year. He concludes from the results that the transplantation gives definite and durable results. The eye loses about half, sometimes two-thirds of its volume; but it rests in the capsule of Tenon as a small stump that is perfectly mobile and extremely useful for carrying the artificial eye.

For the operation to give the best results, Lagrange insists upon the necessity of following carefully the details of his technique, which he gives in detail. These may be summed up as follows:

- 1. There must be perfect cessation of hemorrhage or oozing in the capsule of Tenon before the introduction of the eye.
- 2. Place the cornea of the eyeball transplanted looking backward.
- 3. Bring forward the four muscles, previously marked, and suture them two and two (without twisting) the external rectus with the internal, and the superior with the inferior.
- 4. Do not select a rabbit's eye that is very large, in order that there should not be any distention of the capsule.
- 5. Over the thickenings caused by the muscle pads put in a conjunctival suture uniting the separated edges.

Lagrange regards this plan of preparing for prothesis as that which gives the very best stump. Notwithstanding the partial absorption there remains sufficient to improve the prothesis. If, however, the prothesis still appears insufficient, notwithstanding the stump, this is due to the ocular shells not being adequately adapted. It is the important point that the artificial parts be adjusted most perfectly.

In the discussion Valude thought that although these stumps would persist still he did not think that they would be sufficient to help the prothesis. He had seen one of the cases operated upon by Lagrange, wearing his artificial eye, who had no better movement than if he had not had the stump; and in whom the orbito-palpebral sinking was not diminished. He had elsewhere given the opinion that the other operations for the improvement of prothesis had not given good results. He made, however, an exception in favor of the Mules operation, as capable of giving a durable and useful stump.

ABSTRACTS FROM ITALIAN OPHTHALMIC

BY

V. L. RAIA, M. D.,

PROVIDENCE, R. I.

The Unity of the Pathogenesis of Vascular, Secretory and Nodular Diseases of the Conjunctiva and Neighboring Mucous Membranes.

Dr. Andrea De Falco. (Annali d' Ottalmologia. Fasc. 10-11-1904). Trachonia became known through its repeated epidemics in Europe after the return of Napoleon's troops from Egypt. In 1881 Sattler thought he had discovered a pathogenic microörganism, and since then different germs have been attributed to the disease, the specificity of which, instead of being confirmed, has become more and more obscure until lately by some writers has been completely denied. The author is a partisan of this last theory and considers the affection as the product of an irritation in predisposed individuals for which in adenoid tissues an accumulation of leucocytes in the lymphatic spaces takes place with alterations and hyperplasia of the connective tissue. Follicular conjunctivitis and trachoma, a distinction proposed by De Wecker. are for the author the same thing, a fact which he believes to have anatomically proved.

As a consequence of vasomotor and secretory disturbances a passive congestion takes place in the nucous membranes, and the leucocytes being longer in contact with the oxygen of the red corpuscles are stimulated in their ameboid movements and migrate in the lymphatic spaces, constituting a coagulum, which will be the center and starting point of the future nodules. Vasomotor and secretory alterations of the conjunctiva according to De Falco produce also herpes, chalazion, marginal blepharitis, obstruction of the lacrimal canal and even affection of the mucous membrane of the naso-pharynx and ear. The vasomotor and secretory center of the conjunctiva and neighbouring mucous membranes is the ciliary plexus,

which being disposed around the ciliary muscle resents the irritation of the products of fatigue in asthenopia. He lays consequently great stress on this ocular fatigue; but the irritation of the ciliary plexus to produce similar alterations must find tissues weak by a general dyserasia, as lymphatism. By what the author has said he concludes that the treatment of the nodular affections of the conjunctiva and neighbouring mucous membranes to be effective must be directed; 1st, in improving the general system; 2d, in subduing the irritation of the ciliary plexus and 3d in favoring the absorption of the nodules by mechanical means and irrigation with sublimate.

Corneal Ulcer from Streptothrix.

Dr. De Berardinis, (Annali d' Ottalmologia, Fasc. 12, 1904). To further confirm his previous statement that the common ulcer of the cornea is frequently due to the special form of streptothrix isolated by Prof. De Giaxa, the author reports two cases which he has examined bacteriologically and microscopically. The infection of the cornea had been produced in both instances by a trauma, and while one had been complicated with hypopyon, in the other panophthalmitis had followed, requiring evisceration of the bulb. Cultures were made and colonies of bacteria developed, which inoculated in the cornea of rabbits, produced characteristic ulcers with hypopyon. This special form of streptothrix, studied in the Institute of Hygiene of the Royal University of Naples, according to the researches of Sanfelice and Bellisaris, is greatly diffused in nature, as in dust, many cereals and on the ground. and consequently many corneal ulcers observed in the clinics are considered the product of this microorganism.

Contribution to the Pathological Anatomy of Corneal Ulcer with Hypopyon.

DRS. G. COLOMBO AND G. RICCHI, (Annali d' Ottalmologia, Fasc. 12, 1905). The case reported by the authors was one of absolute glaucoma, to which ulcer of the cornea with hypopyon had later supervened, and on this account it resembles those already published by other writers. The eye had been completely lost and was enucleated to relieve the patient from the excruciating pains from which he had been suffering. The bacteriological and microscopical examination revealed that the pathogenic microörganism was the pneumococcus, which was found under the floor of the corneal ulcer and not in the pus of the anterior chamber, that the Descemet mem-

brane was intact, the endothelium of the same altered, and the iris and ciliary body infiltrated with leucocytes. The germs having entered through the corneal lesion elaborate toxins. which exercise a certain influence on the blood vessels of the iris and ciliary body, by which the white blood corpuscles migrate into the iris, the anterior chamber and cornea surrounding the ulcer. By different authors groups of leucocytes attached on the inner surface of the cornea in correspondence with the ulcer have been found, a fact which is due according Colombo and Ricchi, to the same influence of the toxins on the white blood corpuscles. This case further confirms the statement of the majority of the writers on the subject that the pus in the anterior chamber is not derived from the cornea, but from the iris. The authors conclude that the most rational treatment of the affection is the one successfully experimented by Caldararo with the specific antipneumococcic serum.

Double and Simple Endocular Cysticercus. Two Clinical and Anatomical Observations.

Dr. Ernesto Grasso, (Annali d' Ottalmologia. Fasc. 12. 1904). These two cases of subretinal cysticercus were both observed with the ophthalmoscope and microscopically. The first one showed a detachment of the retina with a round elevation in its center changing form under the influence of electricity, from which diagnosis of the parasite was made. Extraction through an incision of the sclera was decidedly refused by the patient. When he returned, many months later, the evehall being completely lost from general inflammation. Enucleation was advised and accepted. Two cysts were found, each one containing a separate cysticercus. In the other case the patient as in the previous one, having at the proper time refused any operative act on his eye for the removal of the parasite, had to submit later also to enucleation. This revealed the presence of two cysts in communication with each other with only one cysticercus in one of them. The author attributes the disastrous effects on the ocular membranes to the parasite.

Gumma of the Lids from Tardive Hereditary Syphilis.

DR. GENNARO COLUCCI, (Annali d' Ottalmologia, Fasc. 12, 1904). Only two cases of gumma of the lids from hereditary syphilis are to be found in the medical literature previous to the one reported by the author. The patient, a woman, 25

years of age, apparently healthy, presented a small tumor on the upper lid with a waxy, gelatinous appearance of the tarsal conjunctiva, for which diagnosis of amyloid degeneration of the lid was made, a diagnosis not confirmed by the microscopical examination and amyloid reaction. Later on, when the tumor had attained big dimensions and the surface became ulcerated, the true nature of the affection was discovered and confirmed by its total disappearance under mixed treatment

Anatomical Researches on Retinitis Proliferans.

PROF. CIRINCIONE. (La Clinica Oculistica, Ian. and Feb. 1905). In the so called retinitis of Manz. Cirincione says that the special appearance of the fundus is due to a regular neoformation of connective tissue protruding in the vitreous. originating on the optic papilla from the adventitia of the These he has found affected with arteriocentral vessels. sclerosis and the superficial layers of the retina degenerated at the posterior part of the eve only. With the atrophy of the superficial layers of this membrane is associated an hypertrophy of its stroma. The chorioidea is generally normal, as normal are the tissues on the anterior part of the bulb. While Leber thinks with other writers that the hemorrhages which are observed in the vitreous at the initial stage of the affection constitute its starting point. Cirincione is of the opinion that they are the consequence of the degenerated blood vessels. The disease is generally considered as the effect of constitutional alterations (syphilis, etc.), but the author observing the constant localization at the posterior pole of the bulb and its limitation to one eve. inclines to think that chemical substances in the vitreous by irritating the adventitia of the central vessels at their entrance in the eve start the neoformation of connective tissue, which is propagated to the retina along the walls of the retinal blood vessels.

ABSTRACTS FROM SPANISH LATIN-AMERICAN OPHTHALMIC LITERATURE.

RV

FRANK RING, M. D.

SAINT LOUIS,

AND

M. URIBE-TRONCOSO, M. D.,

CITY OF MEXICO.

Assisted by Jose de Gonzales, M. D.,

LEON, MEXICO.

The Role of the Pressure of the Vitreous, and Irido-corneal Adhesion in the Retention of Intra-ocular Fluids.*

DR. M. URIBE-TRONCOSO, in a recent article (Anales de Oftalmologia) deduces the following conclusions:

First. The manometric filtration of Leber does not measure the actual filtration, that is to say, the escape of the liquid outside of the eye, but only the quantity which the anterior chamber may contain, and which depends upon the greater or less resistance which is offered by the vitreous in the dead eye; thus, like the pressure used, in injecting liquid into the eye, and which gradually diminishes in the manometre during the course of the experiment.

Second. Generally a part of the liquid escapes filtration, and accumulates within the eye, but, in certain cases, when the change remains constant in spite of the diminished pressure, a part of the fluid which entered during the first minute might escape, to compensate this diminution.

^{*}An exhaustive paper, with the above title, was contributed by Dr. M. Uribe-Troncoso, to the Tenth International Congress of Ophthalmology, held at Lucerne, Switzerland, 1904.

Third. The filtration of albuminous liquids is much less than that of saline liquids, reaching generally 2-5 to 3-5 of that of the latter, but, the concentration of the solutions does not have a proportionate influence in the diminution on account of the short time which the experiment lasts. When this is prolonged for 8 or 10 hours, the filtration becomes suspended through the accumulation of albumen in the anterior chamber, while the filtrated liquid, on the other hand, is very much reduced in proportion.

Fourth. In the investigations upon the dead eye, on account of the lack of pressure which normally exists in the vitreous during life, the figures which have been obtained as to normal filtration are too high. When equal pressure in the anterior chamber and in the vitreous is obtained, the filtration becomes reduced almost half of the figures cited (2.6 mm. per minute in man, to 2.5 mm. of pressure).

Fifth. When the pressure in the vitreous body is augmented, the filtration diminishes gradually until it becomes suspended completely. This fact is due to the application of the root of the iris against the cornea, which mechanically obstructs the course of secretion.

Sixth. The secretion of the aqueous humor in the living eye must be, also, less than that formerly calculated, and equal to 1.6 mm. per minute in man, to a pressure of 2.5 mm.

Seventh. The difficulty of filtration of albuminous liquids, in the first place, and the mechanical occlusion of the way of filtration through the augmenting of posterior pressure, accounts completely for the mechanism of production of the symptoms which characterize glaucoma.

WILLS' HOSPITAL OPHTHALMIC SOCIETY.

A stated meeting of the Wills' Hospital Ophthalmic Society was held at the hospital on the eighth of May, 1905; Dr. Mc-Cluney Radcliffe in the chair. The subject chosen for discussion was "Iritis."

Dr. S. D. Risley spoke of the etiology of the condition. It usually begins, he said, with congestion of the uveal tract, exudates taking place from diapedesis. The form of the disease depends upon the character and the extent of the exudate. An embryologic study of the uveal tract shows that it is a mesodermic structure, and that it is, therefore, subject to the same dyscrasias that other mesodermic structures are. The classification of the disease may be considered first from the pathological peculiarities depending upon the character of the exudate—as serous, plastic, and purulent; or there may be a clinical classification, or an etiological one. In the first, it is hard to draw any hard and fast line of difference: The etiological classification is by far the best. The frequency of cause is as follows: Syphilis, rheumatism and traumatism.

The irites which are due to rheumatism or syphilis are both of the plastic variety. The serous form occurs in poorly fed people as a rule. The suppurative type is associated with two factors: that which is dependent upon ulcerative condition of the cornea, and that which is due to traumatism in which bacteria have been carried in to the eyeball. In a few instances he had seen an iritis associated with an endometritis, and in one case with gonorrhea. He stated that foreign writers had published a great many cases which were dependent upon the presence of tubercle bacilli, but he had not personally ever seen an instance in which he could, with certainty, say that the condition was due to that cause. He had seen iritis associated with disease of the ethmoid sinuses and swollen turbinates.

Dr. Frank Fisher gave a brief account of the symptomatology of the condition. He stated that when the inflammation is mild (either simple or serous), there is a slight injection of the conjunctiva beginning at the limbus of the cornea and extending outwardly, this process to supply blood to the inflamed parts recurring: Pain—a variable symptom, which may be on the brow, the cheek, or the side of the nose, and

which is aggravated at night, succeeds this symptom. A very early sign is discoloration of the iris tissue which is quite noticeable if the condition be monocular. There is turbidity of the aqueous humor. The retina is more vascular, and later, the ciliary injection changes from a rose tint to that of red or purple. If the aqueous humor is turbid, deposits are left on Descemet's membrane; if there is a great amount of exudate, hypopyon rsults. Photophobia and lacrimation may be mentioned as early symptoms. Where there has been a great amount of lymph outpouring, intraocular tension is increased; but in cases in which the iris is drawn backwards, tension is decreased

Punctate keratitis and descemetitis are different conditions. Seventy per cent. of cases of the punctate form are due to syphilis. In the parenchymatous variety of the disease suppuration follows, and is always accompanied with great pain.

The most difficult type of the disease to detect is the sympathetic. The first symptom is loss of accommodation: later, changes in the chorioid, and exudates into the vitreous, particularly in its anterior portion, can be seen.

In regard to prognosis, Dr. William Zentmayer stated that in case the disease is seen early and synechia are not formed, the result will be good. The serous form is not as favorable as the plastic variety. If the condition is due to traumatism, the prognosis is excellent unless an element of infection is introduced.

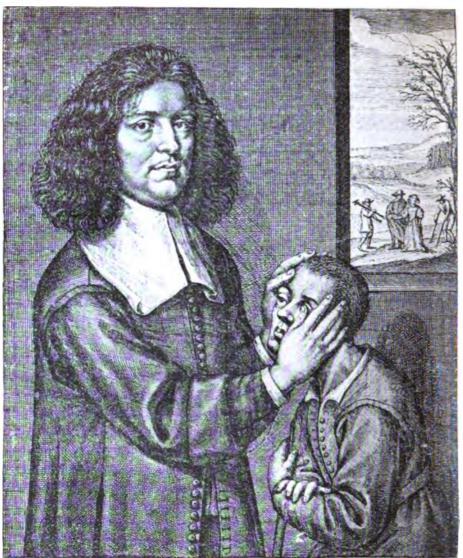
If the sympathetic form of the disease in association with excessive plastic exudate and posterior synechia comes on insidiously, or where the disease is caused by diabetes, prognosis is grave.

Dr. Charles A. Oliver spoke on the treatment of iritis. The cases, he said, can be combatted successfully when recognized early. In his practice he had found that the proper thing to do at the first visit is to alternate the various iridoplegics and cycloplegics, commencing with scopolamin, and later continuing with atropin. He never employed cocain for better endomosis of the other cycloplegic agents if there was any danger of infection. He believed it better to place a cycloplegic agent in the other eve whenever possible.

He had found heat very useful. He had learned to depend a great deal upon the judicious employment of dionin. He had not seen much good in the use of subconjunctival injections though he had faithfully and judiciously employed them in the correct manner. General therapy in the endogenous forms of the disease must be applied to successfully combat the condition. In syphilis, he relied upon the careful use of protoiodid of mercury and mercurial inunctions. He had permanently relieved the iris condition in two undoubted cases of tubercular iritis by injections of antituberculin. infected traumatic iritis he made it an unalterable rule if possible, to excise proturberant bruised areas of iris tissue. In the infected forms or ectogenous type, he had had good results of saving more or less useful evehalls by incision, removal of infectious material-local application of formalin and iodoform with the insertion of Kalt's sutures through a peripherally placed central section. Iridectomy for mechanical purposes—but not in the sympathetic form of the disease. had proved itself of much value in the chronic forms of the disease

Dr. P. N. K. Schwenk said that he had never seen nodules in or on the iris in the rheumatic varieties of the disease. In syphilis, he had found that the nodules appear in the second stage, and that they are found in the major or minor circles of the iris. Punctate keratitis, he believed is due to syphilis. and not to the other dyscrasias. He had seen two cases of tubercular iritis. His treatment of most of the forms of the disease consisted in the local use of atropin; and in both eves if the patient can afford it. With Dr. Oliver, he believed that perfect rest of the parts is essential. As to the use of ice, he employed it preferably one hour at a time out of every three hours. He used inunctions and thought well of protoiodid internally. He believed that if the case be seen early, prognosis is good. He had seen iridectomy do good in selected cases. He had found a useful plan in some of the cases of the punctate form of keratitis, to remove the crystalline lens and to flush the anterior chamber

Dr. S. Lewis Zeigler said that in serous iritis positive galvanism applied to the eye most certainly shortened the duration of the disease: In addition, leeching or pilocarpin to stimulate lymphatic circulation is very important. Turpentine mixture is valuable. He believed that heat is best used except in cases in which there is pus in the ciliary region; in such cases he had obtained better results from the local action of ice.



The true and lively Pourtraieture of Valentine Great akes Esq., of Iffane in y Country of Waterford, in y Lingdome of Treland. famous for curing Jeveral Defeases and distempers by the Stroak of his Hand only.

Sellh W. Faitherne .

Ocular Massage in the 17th Century VALENTINE GREATRAKES, (1628-1666)

THE ANNALS

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THE EYESTRAIN ORIGIN OF EPILEPSY.

By George M. Gould. M. D.,

PHILADELPHIA.

Three years ago, at Craig Colony, New York, I undertook a little test designed only to show that the case of the epileptic is not always hopeless, and that eyestrain might rarely account for the presence of this opprobrium of medicine. The results, as taken from the confused and untrustworthy statistics of the official report, were as follows: The tests concerned 58 patients, all chronically diseased, many hopelessly so. Of these, according to the report, the seizures were lessened in 19 cases by 382. or 44 percent, in three months. One patient, again according to the report, was cured, while the average of cures, during the whole period of the existence of the colony, and by all other methods of treatment combined was one in eighty. figures, I must confess, are not worth much, but taken at their face value, one-third more cures, proportionally, by ocular treatment, than by all other methods, is, indeed, better than I had expected. This proportion, moreover, is doubled by a fact I have subsequently learned, the cure of a second patient who left the institution, and who has no seizures so long as he wears his glasses, so long as they are kept straight and adjusted, and so long as they are changed when advisable.

I have epitomized this story in order to emphasize several suggestions:

1. The pleasure which the superintendent of the colony had, in his report, in pronouncing these results "disappointing," and in minimizing them, so that, since then, a hundred delight-

ed imitators and echoers should be able to teach that eyestrain had no possible causal relation to epilepsy. In truth, one of the most inexplicable of psychologic riddles is the furious glee with which some specialists rush upon the stray medical dog who suggests that a disease, at least occasionally, may be due to an unsuspected cause. Just in proportion to the mystery of the etiology, the more utterly incurable the disease, then the greater is the haste, and the enjoyment, in pouncing upon the intruding cur.

- 2. The same eager delight is shown by some neurologists and editors of defunct medical journals who, ever since, have been growling and snapping in their post mortem dreams. The sweet word, Disappointing, was sniffled only two weeks ago, a propos de rien, by a well known medical journal, and several years after its obsequies.
- 3. My mistake, of course, consisted in not having excluded from the test the old hopeless patients, those on the edge of the grave, and hence incapable of convulsions after death. Epilepsy, once deeply established, is doubtless incurable. All we may hope for is the best cure, i. c., prevention. All public tests should be made upon the younger and less severely afflicted patients.
- 4. The misfortune of the test was that there was no resident oculist or optician to see that the most requisite conditions could have been carried out in the after-history. All oculists well know e. g.. that an astigmatic lens awry, or temporarily not worn, increases the liability to attacks.

But what is epilepsy? I do not mean what, abstractly, is its etiology and pathology; I mean as regards the individual patient. Just what symptoms present in a single patient make his case, admittedly, one of "true," "genuine," or "typical" epilepsy. As near as I can make out from those who pretend to know the nothing that is known as regards epilepsy, it all depends upon the aural cry, O. Mama, and the biting of the tongue. No patient has the real disease if he does not bite his tongue and implore his mother. All other seizures are only "epileptoid," examples of "tonic and clonic contractures." petit mal (which is not much of a mal after all), simulated, pseudo, and false—the mimicries of the disease, perhaps even the whimsies of an impertinent oculist's ignorance. These are unworthy a dignified neurologist's attention, except to name them, apply a ticket, "look and pass on."

All of which scarcely satisfies a serious or observant mind. To him it would appear that there are almost as many different types of epilepsy as there are patients. Did any genuine clinician ever see two cases just alike in every respect? Does

a patient have "epilepsy" who never has an attack except in his sleep, none having seen him during these supposed attacks? Does a person have epilepsy who has only one attack during his life? Or one in ten years? Does a person have the disease who every week or two sinks down in the street, somnolent, and who has to be carried home, has then violent headache, and with a ten-hour sleep is again normal? Does a person have epilepsy who slips softly to the floor, instead of falling suddenly? Does he who froths at the mouth, but does not bite his tongue? Who bites a little, and occasionally only? Is convulsion necessary? Is any one symptom necessary? What is necessary?

Upon closer study it is evident that, from the slightest wavering of the attention for a second, there is no "missing link" through a thousand grades and varieties of mental and physical aberration and incoordination until the Mama-and-tongue type is reached. Some people are very absent minded; who can draw the line between absent-mindedness, lapses of the attention in normality, and admitted petit mal? It is utterly impossible to draw such a boundary between petit mal and grand mal. Nomenclature absolutely fails, and a sharp clinical observation denies that there is any need or gain in attempting the task. Is it not clear that at bottom all types are variants, degrees and accidents of one fundamental fault or abnormalism? The names given by patients to their symptoms support this view. The mama-froth-and-tongue type thus often seems only the last and severest stage of years and years of precedent "falling fits," "fainting spells," "swoonings," "spells," "losses of consciousness," "blind headaches," "stoppings," "odd motions," "lapses," "tired times," "exhaustions," "strange subjective sensations," "visions," "odd feelings," "numbness," "pricklings," "knots in the stomach," "spasms," "cramps," and all the rest. Are there not ten patients with these "epileptoid" or pseudoattacks, to one of the mama-frothand-bite type? The keen desire to throw the ten out of the count and to consider as genuine epilepsy only those of the hopeless and doomed ones in the last stages of the disease, is all one with the desire to find "disappointing" and fallacious any suggestions of etiology and cure.

And these gladly "disappointed" physicians are the anatomic pathologists who have never heard that function precedes structure and begets all organs, and that, in the last analysis, pathology deals only with the terata of physiology. Thought, mind, the soul, sensation—these, they do state, cannot be dissected or weighed, and therefore they are merely the consequences of morbid anatomy which, alas, our poor microscopes

cannot discern. It is gall and wormwood that there is no automatic pathology to be found in epilepsy, migraine. etc. In the neurologists' laboratory there are no slides labeled "section of a headache;" "specimen of seasickness;" "slide showing the megrims;" "the neurons in grand mal;" "the cortex in petit mal;" "stain of the ganglion in loss of attention;" "the hair-bulbs in insomnia;" "the neuron filaments in pseudoepilepsy as shown before death of the patient," etc., etc. There is great happiness to some in the little scientific farces, mind denying the existence of mind, and, life asserting that life does not exist. What an amusing thing is much latter-day neurology and psychiatry!

It would seem wiser to fix the attention upon the early and slight and simple types of the disease. Evolution mightily teaches that we can know and understand a product only when we know its history, and especially its beginning and incipient phases. Naming a thing does not much aid the scientific student of facts. One does violence to the truth in classifying functional diseases by ignoring the intermediates and halfway stages. It is better to look at the facts themselves; and not types or classes, but individuals must be studied, if as physicians we are anxious to cure and prevent. To a right minded man all study of disease must end in the will to cure and the wish to prevent. As to epilepsy we are all pretty well convinced that neither after nor just before the epileptic's body reaches the post mortem table may we expect anything from therapeutics.

"Back to the child!" is therefore the cry of medicine as much as of pedagogy. What is it in the young, and in the incipient stages of epilepsy whenever occurring, that results in lapses of attention, losses of muscular coordination, falling fits, nerve-storms, convulsions and a hundred variations classed as petit mal, epileptoid, epileptic or grand mal seizures? Of course no one can as yet fully answer that question, because no one knows. Those happy in their heredity, or imagining themselves so, say, Heredity! The degenerates say, "Degeneracy!" But Nordeau illustrated the utter absurdity of the theory in one way, and sound observation has settled it nicely in another. Those who ticket the diseases of the sufferers with pompous names will never know. May the Lord of Science be merciful and—unforgiving to them forever!

When we come to study the individual cases of those beginning the epileptic career, of those frightened at the approach of some of its protean prophecies and forerunners, we find sources of mischief, and evidences of malfunction of many mys-

terious kinds. These seem to interfere with habitual normality, and to come, as it were, from without. There is an inexplainable storing up of irritations; together with an inability to do so for long; there are interruptions of the normal, preventions, losses of coordination; there seems a sudden giving away, a crisis, and lastly, a sudden reinstatement of health. Why and where the irritation? Why the derouted reflexes? How and when the storing and the strain? Why the inability to store longer? Why and where the breaking of the dike? How the quick return to the normal?

A continous source of irritation and ingravescent tension may come from a number of causes in a given patient, but of ' all thinkable or discoverable ones none is more clear to all refractionists than evestrain. If one will pressingly inquire, it is astonishing to learn how many of our patients with patently severe evestrain have rhythms of inexplainable ill-health, neryous breakdowns, falling and fainting fits, and many "epileptoid" seizures. How close, indeed, is the analogy of the vomiting crisis and clearing-up of health in sickheadache, to the "typical" epileptic seizure. Many such facts more than suggest to the keen-minded a similar cause as a basis of both pathologic conditions. The entire phenomena graine," indeed, in all their thousand varieties, are much alike in the facts of periodicity of strain, climax, and break, alike also in the needs of ocular rest and for physical activity. It is most suggestive that the best cure for epilepsy is admittedly the draining off of surplus stored energy into healthful muscular activities. In every case of "migraine" there is the same imperative necessity. The analogy is most striking, and should long ago have excited clinicians to suspect a like cause in both diseases. It is not a question of how many or how entirely. It is a question solely of deciding in the single case of the patient there before one, if evestrain exists and if it may be the source of mental and nervous losses of coordination and control. Is it not most noteworthy that 08 percent, of epileptics have astigmatism, and that one-half of these have unsymmetric astigmatism?

That eyestrain may cause epilepsy is the belief of many oculists, and I append a few of the proofs which in my reading have incidentally come to my attention. A thorough gleaning would doubtless show as many more.

The first is that associated with the name of Dr. Stevens. His book was published in 1887, but its preparation dates from the year 1883. In his earliest reported case the eyes were examined in 1876. A noteworthy feature of this case was that

heavy doses of atropin had been administered systemically by his general physician and this drug had the effect of "lengthening the intervals between the attacks slightly." "Since discontinuing the medicine they have returned with more than usual frequency." This patient was cured by "glasses correcting the hypermetropia of 1/24." There was at this time no tenotomizing or even "training the unvielding muscles." The sad state of the art of refraction then, is shown by the statement that of 100 epileptics examined, 18 "had emmetropia, or refraction errors of less than 1 D." Within that amazingly neglected 1 D, we now know lies the vastly greater source of reflex disturbance. There follow reports of two cases of epilepsy due to the involvement of the ciliary nerves in cicatrices. and reported as immediately cured by enucleation. The third case was cured by glasses, but with the ominous addition, "the unvielding muscles were trained to greater flexibility." The fourth was a case of hysteroepilepsy in which pilocarpin took the place of all other curative methods. The fifth case was also one of cure by correction of the ametropia alone. After this (can any one explain why. can one imagine why?), begins the dreary record of operations emphasized and glasses ignored. One may suppose the "emmetropia or refractive errors of less than I D" were also ignored. The subsequent proceedings interest us no more, although there is one case in 1883 reported as cured by glasses without tenotomy. The effect, heterophoria, taken as the cause of eyestrain, and the deplorable ignoring of slight errors of refraction are. I judge, the mistakes which finally ended in the famous report of the special New York commission upon the subject. One may summarize the results of this commission as being, perhaps, as worthless as the reports criticised.

In the New York Medical Journal of April 16, 1887, Dr. Ranney endorses the Stevens operation, reporting its use by himself in eight cases of epilepsy, followed by three cures, with five patients still under treatment.

Dr. Toms (Medical News, Nov. 3, 1900), reports a case of daily petit mal in a boy of 13, completely cured by glasses.

Dr. Wendell Reber (Pennsylvania State Medical Journal, 1902), reports a case of epilepsy cured by glasses. The patient had been having typical grand mal attacks for 15 years, latterly.

^{*}In 1902, I proposed to the Superintendent of Craig Colony, the experiment of atropinizing the eyes of 100 young epileptics for 30 days. The test was not allowed. I believe it would be far more conclusive than the poorly conditioned test permitted. I hope some liberal minded physician or superintendent will sometimes conduct such a simple, harmless and easily carried out experiment.

on the average of 36 in three months. The patient fell to the ground and was unconscious for an hour or more. She had an enormous hyperopic astigmatism with hyperphoria. Dr. Reber's second case was that of a woman having on the average 12 to 14 nocturnal attacks a week. Two other cases are described similar to these. In the discussion upon Dr. Reber's paper, Dr. Richard H. Gibbon stated his belief that "in many cases of epilepsy" refractive errors and ocular muscle-imbalance "are responsible for the condition." He personally knew of five unreported cases cured by oculists—"not relieved, not benefited, but cured."

Dr. Geo. M. Gould (American Medicine, July 15, 1902), reports the following six cases:

Case No. 5349.—The patient was a man, aged 36, who came to me in September, 1898. He had been refracted without a mydriatic by others during the past 16 years, and of course had never had his ametropic error properly corrected. For 14 years he had suffered from insomnia, which had of late grown worse. There was also headache and pain in the eyes. During this time he had been afflicted with frequent attacks of unconsciousness. Just how often these occurred was difficult to make out, as he never fell or had convulsions; he only knew they were "frequent." I found his ametropia was:

Since wearing the spectacles described, coupled with strengthening of the adduction power, he has had but two or three slight and short attacks of unconsciousness that he knows of; he at once began to sleep better, his headache and exophoria disappeared, and he is now greatly improved in health.

Case 5352.—The patient was a man of 25, who came to me in September, 1898, and who on account of his symptoms had been obliged to resign his position in a bank. He had also been refracted without a mydriatic, and his glasses were the reverse of correct. There was a family history of insanity and epilepsy. He complained of occipital headache, pain in the temples and neck, and sick headache. During the past year he had been much worried by what were plainly attacks of the petit mal type; but the symptoms most hard to bear were what he called "thickening of the tongue," with loss of memory, and blurring of the vision. After prescribing glasses for his low compound hyperopic astignatism against the rule, all of these symptoms began at once to abate. He had but one slight at-

tack of "thickening of the tongue" during the three weeks following, and in two months all his symptoms had disappeared, he was gaining in flesh, and he was happy. In two years he began to be frightened at obscure symptoms which he feared might finally become the same as those from which he formerly suffered. I found his ametropia had changed, and since ordering new lenses I have not heard from him. He promised to return in two years.

Case 6173.—The patient, a woman of 45, came to me in October, 1905, in a bad state of health, suffering with all the symptoms of eyestrain. There had also been chorea. Seven years ago she had eclampsia, and since then, every two or three days, except when under the influence of bromid, she had attacks of unconsciousness, in which she frequently fell to the floor. Bromid medication served only to postpone these attacks for a week. She had 4° of exophoria and 4° of hyperphoria with an irritating degree of compound hyperopic astigmatism. I corrected her ametropia, her presbyopia, and her hyperphoria with one pair of bifocal lenses, and from that time to May 1, 1902, she has had but one slight epileptic attack that her husband knows of, and she is greatly improved in general health.

Case 5097.—A man of 22 came to me in February, 1898, with opticians' glasses not correcting his astigmatism of 1.37 D. ax. .90 in each eye. During the last six years he had had six or seven epileptic convulsions, the aura being a trembling of the left arm. In the last two seizures he had bitten his under lip badly. After he began wearing the cylinders I ordered, he at once gained flesh, was more healthy; he has not had an epileptic fit since.

Case 2633.—This is particularly of interest to me because I was so convinced that the man's epilepsy could not be due to his small ametropic error that I at first refused to prescribe glasses. He was sent to me in March, 1893, by a physician in New York State, who was certain that his symptoms pointed to severe evestrain. He was 43 years of age, just the age, be it noted, when presbyopia was beginning to make itself irritatingly manifest. For six months he had been "running down in health." Whenever he attempted to read his eyes troubled him (he called it "weakness of the eves"), followed by occipital pain, and if he persisted there was objective vertigo and great sleepiness. The chief complaint was of attacks of dizziness occurring often in the street, associated with nausea. He would sink to the ground, and then would have to be carried to a carriage and driven home, where he remained in bed in a semiunconscious state ("as if drunk"), usually for the rest of the day. These attacks had occurred two or three times a week.

Under a mydriatic I found his only ocular abnormality was one-half a diopter of hyperopia in the right eve and one diopter in the left eye. I told him I did not believe his epilepsy was due to evestrain. I had him examined by a competent aurist and rhinologist with a negative result. As it was a matter of awful seriousness with the poor man. I sent him to the most distinguished diagnostician in Philadelphia, who, after thorough study, thought all the symptoms indicated a tumor of the cerebellum. Before sending the thoroughly disheartened man home I finally said to him I would prescribe the glasses indicated for his slight hyperopia, anisometropia and presbyopia. I told him that he could lav aside the distance glasses in two months if his epileptic seizures continued as before. He weighed 127 pounds at the time. I did not hear from him or see him for about two years, and supposed that he had become a confirmed epileptic or had died. He now came back for a change of glasses, as he had had some disquieting signs of a possible return of his old trouble. From the day he left me he gained one pound a day until he reached his normal weight. 172 pounds. He has never had a seizure or a decided epileptic symptom since. His static refraction remains the same: I have changed his reading glasses several times. He was well and healthy a year ago.

Case 5738.—This patient, a man of 37, came to me October 14, 1899, with a history of typical grand mal attacks, biting the tongue, etc., for 25 years. He had also excruciating headaches, and much indigestion. As near as he could estimate, the attacks had numbered about 12 a year. I found his error of refraction was:

This, especially with perfect acuteness of vision in both eyes, constitutes a defect infinitely more irritating to the nervous system than regular astigmatism of far higher degree. I prescribed correcting lenses. I saw this man last on April 28, 1902. In the two and one-half years that have elapsed he has never had a fit nor a headache; there is now no complaint of indigestion, and he has good health. One year and a half after I first prescribed he read fine print long and late during one evening, and this use of the eyes brought on a kind of a mild epileptoid attack that so frightened him that he came to me the next day to see if the glasses were still correct. I found a con-

siderable change in the refraction had taken place, and ordered new lenses, now worn with entire satisfaction.*

Dr. Zimmerman (New York Medical Journal, Nov. 21, 1903), reports one case of convulsive attacks, "thought by other physicians and himself to be true epilepsy," completely cured by glasses for two years.

A. L. Ranney (New York Medical Journal, Dec. 3. 1904), declares that evestrain is responsible for many cases of epilepsy and refers to a previous publication of the notes of 26 cases. Four patients abandoned treatment from the beginning, but of the 22 remaining patients, 10. be considered today (nearly eight percent.. may years since the aforesaid publication) as well (seven being completely cured and three being practically cured); amelioration of the attacks has been afforded by eve treatment in nine cases, or nearly 41 percent.; and no improvement has been observed in these cases, or about 14 percent. He gives the histories of six additional cases. His general conclusions are that a very large proportion of epileptics suffer from some reflex irritation, most commonly from eye trouble. The refraction of all patients should be determined under mydriasis. Glasses should be worn for a while before any attempt is made to adjust the eye muscles. The most serious refractive errors and muscular defects in the orbits do not necessarily create eve symptoms; even when reflex symptoms produced by existing eve defects are extremely severe. The percentage of cures of chronic epilepsy under skillful eye treatment will naturally be modified greatly by the abnormal eye conditions found, the physical condition of the patient, the amount of drugs that have been given to the patient, and the complications that may coexist with eve strain. No one is ever justified in promising a cure of epilepsy by any plan of treatment, but examination of the eves should be a preliminary to any other mode of treatment.

Dr. Geo. H. Thomas (Northwestern Lancet, June 1, 1903), states that eyestrain "in one person produces migraine, in another epilepsy," etc.

The following letter from Dr. J. T. Duncan, of Toronto, is dated May 11, 1903:

Miss Blank is an epileptic (grand mal) and has suffered from convulsions for years, in spite of the best of treatment. On Sept. 1, 1902, she was referred to me to test her vision.

R. E. had vision of 6/6.

^{*}Since this report was written I have had several cases, equally striking, of the cure of epilepsy by glasses.

L. E. 6/12.

After the use of a mydriatic and retinoscopy, the final correction gave ${}^{0}/_{a}$ in each eye, or together ${}^{0}/_{a}$.

The order was:

R. E. Sph.—0.25 c. Cyl—0.25 ax. 105. L. E. Sph.—0.25 c. Cyl—0.37 ax. 75. To be worn constantly.

Treatment has been continued as before, but she has had no convulsions since wearing the glasses.

Mr. N. Bishop Farman (Medical Press, Nov. 18, 1903), describes the case of a patient afflicted with fits, "tallying well with the picture of epilepsy, except that consciousness was not lost." After glasses had been ordered there were no more attacks.

Dr. Theobold (Baltimore Medical Society, Jan. 11, 1905), said he had found one case of epilepsy due to eyestrain, adding, "It is not improbable that if cases of epilepsy were so often referred to the oculist as are cases of intractable headaches, a closer relationship between eyestrain and epilepsy might be found to exist."

Dr. Francis A. Gallagher, of El Paso, Texas, in a personal letter to me, describes a case of "epileptic fits" cured by glasses.

Dr. Myles Standish (Boston Medical and Surgical Journal. Feb. 23, 1905), says he has seen no absolute cure by glasses in adults and long standing cases, "although," he adds, "it is undoubtedly true that their removal increases the number and virulence of the attacks, and such patients are always unwilling to give them up. In children and in youth, however, it is certain that epileptiform convulsions, in no wise distinguishable from true epilepsy, have been absolutely cured by correcting the error of refraction or the muscular imbalance."

Mr. C. Ernest Pronger, of Harrogate, England (see Biographic Clinics, vol. III), says that in epilepsy some error of refraction is very commonly present, and that the correction of it tends unmistakably to mitigate both the intensity and the frequency of the attacks.

It is scarcely courteous to say that these gentlemen are not to be trusted, and that their testimonies are without value. It is surely unscientific to put aside such evidence. It is wholly contrary to professional spirit to wave aside any explanations that may throw light on a disease about which we confess we know nothing, and are powerless to cure. It is brutally inhuman, and inhumane to slam the door in the face of a million sufferers from a horrible and tragedy-bringing affection, when possibly some of them might be cured, and many others pre-

vented by so simple an experiment as that of wearing scientific spectacles.

POSTSCRIPT.

Since this article was in type Dr. William P. Spratling has published a paper entitled *Eplipsy and Eyestrain*, in which he savs that he greatly regrets that the patient he formerly reported as cured by spectacles did not fulfil the promise of recovery. For 15 months after the glasses were ordered the patient had no attacks; but he then broke his glasses, and while not wearing any glasses he had four attacks in January. Then he again "put on glasses," and had 10 attacks in two months. For nine months there were now no attacks, but several a month occurred after this. This ludicrous clinical report is followed by the following still more ludicrous statement:

"The sole point to which I wish to call attention is that the glasses in this case seemed to 'repress' the epileptic attacks in a manner not unsimilar to the 'repression' that is often secured by the use of bromides, and that like the bromides while they may mitigate the disease, they are without power to cure."

A more capital example could not be desired of the folly of committing such experiments to the care and reporting of those incapable by nature and training of realizing the simplest principles and conditions involved. Fortunately for those who do not delight in consigning the epileptic to despair and therapeutic nihilism, the very report (as happened before) is most encouraging. Nothing could be more convincing of the power of the correction of ametropia than the facts set forth—the freedom from attacks of the patient, for 15 months, their resumption with the broken and the abandoned glasses, and all the rest of the history. The important points of the entire affair. are, of course, wholly omitted—what kind of glasses were ordered after two years, who ordered them, who overlooked the fitting, etc.? These reports by Dr. Spratling come out every two or three years with all the clinical discrimination and clarity of a stone-crushing machine into which are cast boulders or epileptics, with the foregone conclusions of "disappointing" and "regrets." One is reminded that there is a "Reformatory" the United States where in half bushel basket of minus spherical spectacles is placed by the side of another basket of plus, spherical lenses; the poor prisoners with headache or bad vision are then told to choose their own glasses from either basket and go off and wear them! And then this "repressive" effect of glasses like unto that of the bromides—what a mixture of science, sympathy. and therapeutic zeal!

TREATMENT OF CONVERGENT SQUINT IN YOUNG CHILDREN.*

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In this paper the variety of squint designated as "convergent concomitant" will be the only one considered. Since the paralytic variety and the cases due to congenital defects of various sorts form such a small per cent. of cases, and are little amenable to treatment other than operative, which at best is far from satisfactory, they will be excluded.

Esophoria, which Valk designates as "latent squint," will also be omitted as, in my opinion, it is a distinct entity by itself

Since this body is largely made up of practitioners of general medicine, the subject will be presented in a manner which I trust will be of interest to them. In fact, I desire to make this paper appear in the light of an appeal to the general practitioner.

Cases of squint are generally first seen by the family physician, and in most instances his advice is sought as to the advisability of beginning treatment.

Surgery has made rapid strides during the past 25 years, and in no department has the improvement been greater than in this "orthopedic surgery" (if I may so call it) of the ocular muscles.

In my opinion the physician who advises "waiting for the child to outgrow the squint," or says "the child is too young to wear glasses," is as remiss as he who advises a waiting policy in acute appendicitis.

I desire to state unqualifiedly that no child is too young to begin treatment or to wear glasses, if said glasses are properly fitted optically and mechanically. Any oculist who states that children of three, two, or even one year of age are too young for glasses has either never given them a fair trial, or is lacking in skill or patience.

The etiology of squint was little understood until the appearance of Donders' work, and his clear elucidation of the

^{*}Read before the New Jersey State Medical Society, June 22, 1905.

causal relation of hypermetropia and hypermetropic astigmatism has never been successfully controverted.

The arguments of the opposers of Donders' theory are easily refuted. The denial of the existence of amblyopia ex anopsia can have but little weight with a surgeon who has seen dozens of cases while under proper orthoptic training by methods to be soon described, in which the vision of the squinting eye has risen slowly and progressively from ²⁰/₂₀₀ or ²⁰/₁₀₀ to ²⁰/₅₀, ²⁰/₄₀, ²⁰/₃₀, and in some few instances to even ²⁰/₂₀.

But they say a large percent, of hypermetropes do not develop squint, and some cases of convergent squint have no hypermetropia." Conceded: but reasoning along the same lines, a large percent, of syphilitics do not develop tabes and in a certain per cent, of tabetic cases no specific history can be obtained, but these facts do not disprove that 90 per cent. (as given by most authorities) of tabes is due to syphilis.

The secret of why so many hypermetropes do not squint seems to have been satisfactorily answered by Worth, who attributes the occurrence of squint to deficiency or absence of the fusion faculty.

Since the motor-nerve supply of the ciliary muscle governing accommodation and that of the internal recti muscles is the same, it can be readily understood how the hypermetrope, in the excessive effort to accommodate, develops internal squint. The point not clearly understood was, why a larger percentage of hypermetropes did not squint, if hypermetropia was the exciting cause of convergent squint.

This question has been satisfactorily answered by Worth, who finds in his large series of cases that to develop convergent strabismus the patient's fusion sense must be wanting. Given this condition, the hypermetrope readily becomes a squinter.

It has also been noted that the cases with low grade and high grade hypermetropia do not develop squint as readily as those of moderate grade. This is easily explained, as the low grade cases are not compelled to exercise excessive accommodation to obtain distinct images. The high grade cases are unable to secure distinct images even with maximum accommodation, so the effort is abandoned, and one of the chief exciting causes of convergence is removed.

Another most interesting point is, that the squinting eye almost invariably contains the greater amount of refractive error, which readily explains why the other eye is selected for fixation.

Worth's monograph on the subject is founded on his observation of over 2200 cases, and since it is such a classic on this subject I desire to quote from it as follows:

I. From the preface:

"In cases of monolateral convergent squint, the usual routine treatment by glasses and operation gives extremely unsatisfactory results. In about one-third of these cases the wearing of glasses causes the eyes after a time to become 'straight.' In the other two-thirds, the deformity may be more or less removed by operation, but more often than not the deviating eye becomes very blind, and acquisition of any sort of binocular vision is quite the exception. On the other hand, cases of monolateral squint in which treatment is commenced early and carried out by the methods described in these pages, are nearly always perfectly cured, having good vision in each eye, and good binocular vision."

From pages 25 and 28:

"Two essential conditions are present in every case of comitant convergent squint.

- 1. An abnormal convergence of the visual axes.
- 2. A defect of the fusion faculty.

Other conditions may also be found.

- 3. The vision of the eye which is not being used for fixation is almost invariably suppressed.
- 4. There is in rather rare instances more or less congenital amblyopia.
- 5. There is very often acquired amblyopia in the deviating eye, as the result of neglect or inefficient treatment.
- 6. There is usually a refractive error, commonly hypermetropia and hypermetropic astigmatism.

Convergent squint presents certain clinical varieties. These may be conveniently classified as follows:

- 1. Occasional squints, of which there are two classes:
 - (a) Premonitory occasional.
 - (b) True occasional.
- 2. Constant monolateral squint.
- 3. Alternating squint. Of these there are also two distinct classes:
 - (a) Squint which accidentally alternates.
 - (b) Essentially alternating squints."

In a series of over 1000 cases he finds 85 per cent. monolateral. The following table shows the age at which the trouble began:

Refore	1 year	r				cases
Between	1-2	years	. .	· • • • • • • • • • •	186	"
44					247	"
44	3-4	46	<i></i>		189	"
• 6	4-5	**	 .		113	44
"	5-6	"		· • • • • • • • • • • • • • • • • • • •	73	"
After 6	vears		. 			44

As will be seen, over 90 per cent, developed before the sixth year, and nearly 60 per cent, before the fourth year.

Since these cases begin so early in life, why leave the treatment for a later period? What would be our opinion of the orthopedist who advised that cases of talipes go until the child is 10 or 12 years of age and then be operated?

Yet this is exactly what was formerly advised in cases of squint, and I regret to say such advice is given even at the present time.

Worth states that the fusion faculty develops before the sixth year and very few cases secure perfect binocular vision after that age.

He gives three grades or degrees of fusion.

First Grade—Simultaneous macular perception.

Second Grade—True fusion with some amplitude.

Third Grade—Sense of perspective.

The apparatus used to develop the fusion faculty is an ingenious device of Worth's which he has named the amblyoscope. It consists of two adjustable tubes joined by a hinge and by its use it is possible to bring about simultaneous macular images, no matter how great the degree of deviation.

The plan followed in the treatment of these cases is as follows:

- 1. Optical correction.
- 2. Occlusion of the fixing eye.
- 3. The use of atropin in the fixing eye.
- 4. Training of the fusion sense.
- 5. Operation.

The fitting of these cases with proper glasses before the age of 6 years is almost entirely done objectively by the employment of the "shadow test."

I have found it a good plan to give full correction in the fixing eye and .50 D. less than the full correction in the squinting eye.

The occlusion pad for the fixing eye is an ideal plan of treatment, but in many instances the unruly child refuses to wear it and the parents object to the use of the adhesive plaster covering. However, I enforce its use when possible.

The blurring of the fixing eye by the constant use of atropin is, in my opinion, the most important point in the development of the amblyopic eye. This can be carried out for months at a time with an occasional respite with no danger whatever to its future function.

The patient must be kept under observation, as Worth reports one case in which too long continued use of atropin transferred the squint to the sound eye.

This also occurred in one of my own cases with resulting reduction of vision in the fixing eye and increase of vision in the squinting eye. This case alone has satisfied me that there can and does not exist a true amblyopia ex anopsia.

When the squint is alternating I often use atropin in both eyes constantly, adding +3.00 S. pasters to the distance correction, making the patient practically presbyopic. This in a great measure removes the desire for accommodation and lessens the tendency to squint.

So far as I am awaré this idea is original, as I have no knowledge of its having been used or recommended by any other worker along these lines.

The training of the fusion faculty requires time and patience. The confidence of the child must be secured, and in many instances it must be done in a spirit of play. The man who does not love children or can not overcome their shyness will labor at a great disadvantage. As soon as fusion of the first degree is obtained they can be given a stereoscope and a set of Kroll's pictures for home use.

This plan of treatment in no wise interferes with any operative procedure to be taken up later. In fact, the chance of parallelism following an operation later is much enhanced by previous orthoptic training.

As to just what operative precedure should be undertaken, the claims made for the various operations would seem to prove that each one has its place.

The surgeon who has had a case under observation for two or more years should be able to discriminate with judgment as to whether his patient should have:

- 1. Simple tenotomy on one or both eyes.
- 2. Tenotomy and advancement on one.
- 3. Panas' operation of stretching and tentomy on both.
- 4. Advancement on one or both; or,
- 5. Some one of the various tucking or folding operations. Each case must be a law unto itself.

My personal preference is for the advancement operation of Dr. Wooton as modified by Dr. J. J. Thomson.

The results are much more satisfactory if the orthoptic training is continued after the operation.

The operation of Panas as a routine procedure is, in my opinion, very poor surgery. Over-correction often follows, and the resulting deformity is worse than the condition previous to operation.

As to the percentage of cures wrought by the optical and orthoptic method of treatment I have no statistics to submit at the present time.

Largely through the courtesy of my chiefs of clinics, Drs. Van Fleet and Lewis, at the Manhattan Eye and Ear Hospital, I have treated upward of 200 cases during the past 2½ years. A certain per cent. of these cases have been cured, but nearly one-half of them are still under treatment.

The more cases I see the more I become convinced that treatment should be instituted before the fourth year, as most of the cases seen between the second and fourth years yield rapidly to treatment.

The cases seen early in life who have squinted but a short time are almost invariably cured in a few weeks or months.

It would seem that Worth's claims are modest and that with improved technique, from 75 per cent. to 90 per cent. of cases of convergent squint under 5 years of age can be cured by methods other than operative.

In the face of these facts it seems hardly possible that any practitioner of medicine will permit any of his little patients to go untreated until the squinting eye becomes hopelessly blind

THE SURGICAL TREATMENT OF PTOSIS.

By J. J. Thomson, M. D.,

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NEW YORK.

There are very few procedures in ophthalmic surgery that present greater difficulties, or are attended with more uncertainty, than the satisfactory correction of ptosis. This fact is best attested by the great number and variety of operations for the cure of this condition that have been brought forward during the last century, many of them differing only in the slightest details. In some, ideas that were embodied in two previous operations have been combined in an effort to produce a more satisfactory result. The less the degree of unilateral ptosis, the more difficult is it to correct with a good cosmetic result, because in the more marked cases at least some improvement is generally obtained, and although the appearance may not be all that could be desired, or the lids be symmetrical, they look more alike than before the operative interference. This. however, is not true of the lesser degrees, where the ptosis is only slightly apparent, for in those cases a slight over-effect is just as bad or even worse than the conditions previously existing, while an operation like that devised by Panas is frequently quite disfiguring.

It would seem that the most rational way to determine the best method of cure would be to consider the etiology of each case, and endeavor to remove or correct the underlying cause. While this is possible in a few cases, in the great majority, and especially in those of interest from a surgical standpoint, the exact cause is frequently very obscure and difficult to definitely determine. Among the more frequent causes of acquired ptosis, may be mentioned conditions causing overweight of the lid. spasm of the orbicularis, hysteria, central nervous lesions, peripheral pareses and muscular insufficiency, either from iniury, atrophy, or altered innervation. Disregarding the cases due to hysteria, spasm of the orbicularis and syphilis, and those in which a progressive central lesion is present, we come to the large class where ptosis has existed for a number of years. most frequently from childhood, and either remaining stationary, or gradually growing worse, and where it is not associated with paresis of any other ocular muscle. They are generally

regarded as conditions to which local surgical treatment alone is applicable, and the large number of operations before mentioned, and admirably discussed and criticised by Dr. M. L. Foster in the *American Journal of the Medical Sciences*, December, 1899, have consequently been devised.

Where ptosis is due to overweight of the lid, the removal of such weight, by whatever means is best adapted to the individual case, is obviously the proper procedure, or where it is due to a thickening of the lid, as from trachoma, a section of the entire lid may be removed.

Excluding trauma as a cause, in the remaining cases where there is well marked ptosis of long standing, with some motion still present, it is impossible to determine whether the cause of the trouble is excessive length, or atrophy of the muscle, or whether it is a defective innervation acting on one otherwise normal. Consequently we are obliged to institute surgical treatment without very positive knowledge as to the etiology. Among the earlier operations may be mentioned the removal of an elliptical piece of skin, or the passage of various forms of subcutaneous sutures, for the purpose of forming cicatricial bands between the tarsal cartilage and the tendon of the occipito-frontalis muscle. Many different suture materials and variations in the method of their introduction, have been advocated at different times, but have always proved inadequate.

About 1830 Mr. Hunt proposed the method of attaching the skin of the lid to that of the brow, and thus utilizing the motion of the occipito-frontalis to produce movement in the lid. This idea was afterwards elaborated and improved on by Panas, and afterward by Van Fleet, and many times gives satisfactory results, especially in bilateral cases. The great obiections to it, however, are the uncertainty of the effect to be obtained, and the resulting deformity. Foster stated in his article published in 1899 that this operation was the best he knew of at that time, but it certainly left much to be desired. The movement of the lid is not controlled by the impulses that ordinarily govern this act, and is therefore unnatural, and the accompanying wrinkling of the brow gives to the patient a very peculiar appearance. Besides there is always an unavoidable tendency to puckering of the skin over the lid that requires a long time to smooth out. It is obvious that any operative procedure that will give a normal movement of the lid over the globe and in the proper direction, must be directed to the levator palpebrae muscle or to its tendon. This is the only means by which an ideal result can be expected in cases where the action of that muscle is defective, no matter what the cause may be. This has long been recognized, and at least as early

as 1860 operations for the advancement of the levator palpebrae superiorus were in use, but for some reason they seem to have been abandoned, or only occasionally employed.

Wolfe, in 1897, described an operation for advancement of the levator, in which, after a double eversion of the lid, all the incisions were made in the conjunctiva, and in which no incisions were made in the skin. This technic is of necessity very difficult, and one might say in the majority of cases entirely impracticable. Recognizing this, Wolfe later described a technic in which the muscle is shortened through an incision in the skin of the lid. This seems to be by far the most rational method of dealing with cases where there is a deficiency of muscular action, due either to a defect in the muscle itself, or in its innervation, and it is this operation, slightly modified in technic, which I wish to describe in detail.

The objection has naturally enough been brought forward that theoretically it is useless to advance an atrophic muscle. or to endeavor to increase its action by this means when its nerve supply is faulty, but the experience of myself, and other operators at the Manhattan Eve and Ear Hospital, seems to prove that such an increase in action does actually occur. It may possibly be due to some mechanical advantage which the muscle enjoys on account of its new position, or in some cases to the shortening of a muscle that was previously too long. Whatever the explanation, an increase in the motion of the lid certainly occurs, and can be made proportional to the amount of muscle exercised. Repeated experience affords the only means of telling how much to remove in order to obtain the desired effect in a given case. The history of one of my cases. which I think clearly shows the efficiency of this operation in ptosis of nervous origin, is as follows: The patient, a man of 33 years, has had unilateral ptosis as long as he can remember. He remembers, when a child, having had a tumor of some sort on the same side of his neck. In addition to this ptosis he has miosis in the same eve, and slight impairment of motion of the vocal cord, giving a huskiness to his voice. This combination of symptoms, together with the history, undoubtedly points to involvement of the cervical sympathetic, yet following the operation of advancement motion was almost perfect in the paretic lid. There is no difficulty in closing the lids, and they are kept well closed during sleep, while with the ordinary effort necessary to open them the upper lid is carried over the eyeball in the normal direction. The only noticeable defect in this case, and one that I have noticed in other cases, is that the evelid does not follow the downward movement of the globe to the same extent as does the opposite one, when the gaze is directed to the floor. This gives an appearance very similar to that which is present in exophthalmic goitre, known as Von Graefe's symptom. In the more severe cases, where excision of a considerable portion of the muscle is required, this condition generally follows, but during the normal and ordinary excursions of the globe it is scarcely noticeable.

The technic from which I have obtained the best results, although tedious, and requiring considerable time, is not specially difficult, and is as follows: After making an incision through the skin following the upper border of the tarsal cartilage, and extending completely from one end of it to the other, the skin should be completely separated from the underlying orbicularis as low as the ciliary margin, and as high as the orbital arch. This extensive dissection is necessary in order to give room and freedom for the subsequent steps of the operation. Two vertical incisions are then made through the orbicularis muscle, one on either side of the tendon of the levator, right down to the tarsal cartilage below, and as deep as the conjunctiva above it.

The portion of the orbicularis between these incisions, together with the tendon of the levator, is separated from the conjunctiva as far back as possible. When the dissection is carried upward about three-quarters of an inch, the cellular space between the orbicularis, where it passes to the orbital margin, and the levator, where it dips into the orbit, is readily found, and working downward from here, the two planes of muscle are easily separated, and the redundancy in the orbicularis is cut out. The tendon of the levator is then seized with a forceps to prevent it from slipping back into the orbit, and its attachment to the cartilage is cut. As much of the muscle as is deemed necessary is excised, and this amount, of course, varies according to the degree of ptosis present. Ordinarily between 11/2 and 3 mm. should be removed. Three mattress sutures are then inserted into the tendon, one in the center. and one near each margin, and the other end of the stitches passed into the cartilage near its ciliary margin. Care is required to get the center stitch placed properly, and the lateral sutures equally distant from it. The reason for using mattress sutures is to overcome any tendency they may have to cut out. Silk is the best suture material. It is not necessary to bring the edges of the wound in the orbicularis together because, owing to the shortening of the levator, they naturally fall in apposition. I think it is well to remove a narrow strip of skin before bringing the cutaneous margins together, otherwise there will be a fullness over the lid for some days. A dry

dressing and bandage is applied, and the wound should be dressed daily.

It will be seen that no disfigurement can result from this operation, the incision being in a normal fold of the skin, and if the operation is a failure the appearance is no worse than it was before, which, to say the least, is an advantage, when speaking of ptosis operations. The most difficult part of the technic is dissecting up the skin, and separating the levator muscle from the underlying conjunctiva. If the conjunctiva is punctured very little harm results, and buttonholes in the skin, if such are made, are readily brought together with sutures, and invariably heal by first intention. I have never seen any trouble from the buried silk sutures, and the cartilage is quite tolerant to their passage through it. In one case the middle stitch was placed so deeply as to be visible through the coniunctiva. The last time I saw it, which was about six months after operation, it had almost entirely disappeared. The cases which I have had longest under observation have not been done longer than two years, but up to the present there has been no tendency to a recurrence of the ptosis, such as frequently occurs where skin flaps alone are used, owing to their tendency to stretch. I have seen two cases where the operation was done for ptosis due to old trachoma, and in which the results were excellent, but I fear the tendency to use it in all kinds of ptosis cases will undoubtedly bring it into disrepute. The class of cases to which Hugo Wolfe's operation is most admirably adapted are those due to enfeebled muscular action.

Although the number of cases that I have had an opportunity to observe is too small for the formation of any very definite conclusions, I feel that the results have been sufficiently encouraging to warrant a fair trial, or rather a retrial, of this operation by other ophthalmologists.

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OPERATION FOR SYMPATHETIC SOFT CATA-RACT, WITH REMARKS ON SYMPA-THETIC OPHTHALMIA *

By Prof. Dr. J. Hirschberg, Geh. Med. Rath., BERLIN.

Translated by Clarence Loeb, A. M., M. D., St. Louis.

On Jan. 26, 1905, I was consulted by a well built woman of 26 years of age. She was sent from quite a distance by her family physician, who had hopes of her cure, on account of an article by me in the *Centralblatt* (1899, pages 246-249).

Formerly her vision, both for far and near, had been excellent. Seven years ago her left eve became diseased. She was treated by a very excellent specialist in a university town, who diagnosed an ablatic retinac followed by blindness. On Oct. 31, 1901, acute glaucoma appeared in this eye with uncontrollable vomiting, lasting several days. Iridectomy was performed November 27, 1901. The right eve, which, up to this time. Dec. 28, 1901 (iritis), had been entirely healthy, became suddenly inflamed and vision almost completely disappeared within a few days. She went at once to her oculist, who found that she had a sympathetic ophthalmia. She could count fingers at 1 m. The left eve, which had been blind for a long time, was at once enucleated (Jan. 4, 1902). This was followed for five months by iodin and mercury, with injections of sodium chlorid under the right conjunctiva. The vision rose to 5/10.

The patient returned to her distant home. The photophobia and sensitiveness remained. The vision gradually grew worse. By June, 1902, she could not write, and soon was blind except for perception of light. For two years in succession, she took the hunger treatment at Bad Lindewiese, but the eye remained blind. Her oculist, as he wrote me, did not wish to operate as he feared a shrinking of the ball.

I found projection and perception of light satisfactory. The ball was soft, the cornea clear and the anterior chamber shallow. When a speculum was used, the eye became red. The iris was completely degenerated, its fiber-relief indistinct and its posterior surface everywhere adhering to the lens capsule. Broad, triangular projections of the entire thickness of the

^{*}Centralbi. f. prak. Augenheilkende, April, 1905.

iris extended into the pupillary area and fused with the thick, hard deposit on the capsule, where could be seen, under magnification with a lens, new-formed radiating blood vessels which anastomosed with those of the iris.

If the patient had been a child from the neighborhood I would have postponed the operation two to three years. But since she was 26 years of age, and had made so strenuous a trip in company with her father and relatives, and had put all her hope in the operation, I could not make up my mind to condemn her for three years more. Furthermore, she was intelligent and quiet, and had behaved well during the painful glaucoma operation. The operation was decided upon. Naturally, it was necessary to keep from touching the iris in order to prevent the shrinking of the ball, which was feared. In the second place, the capsule had to be removed completely that the removal of the tenacious lens fibres might be as easy as possible.

On Jan. 30, 1905, after cocain and holocain had been used, the speculum was inserted, the ball was grasped above with the forceps and a large incision was very slowly and very carefully made below in the sclera by means of the medium lancet. The four-pointed capsule forceps was introduced into the pupillary area, opened and forcibly closed. The first time the points slipped off of the cartilaginous capsule. The second time the capsule was seized, torn and a large piece was removed, i. e., all that could be seen in the pupil. The pupil at once dilated. Pieces of lens began to bulge out. Griffin's syringe, which had been carefully sterilized, was introduced, but removed very little lens substance. The speculum and forceps were now removed, and most of the paste-like lens mass was easily removed by soft and gradual pressure with the spatula. Healing was normal. The tension became better. The pupil was soon entirely free; a red reflex could be obtained with the ophthalmoscope, and everything else was equally good. The details of the fundus, however, could not be made out, evidently on account of vitreal opacities. There was also a disease of the retina, as shown by a scotoma in the center of the otherwise normal field of vision. The vision at once rose to fingers at 1.5 m. (with + 8.00D, to + 10.00D,). With + 12.00D, letters of 20 m, were read at 15 cm.

The patient, however, who could move around freely, and who, by virtue of her great intelligence, was able to recognize her surroundings in spite of her slight vision, was very well satisfied and much more grateful than many people who had recovered completely normal vision by means of a cataract op-

eration. April 10, 1905, she was sent home to be further treated by absorbing remedies.

One operation was sufficient in this case, evidently because the patient held still so well that the lens could be completely removed. In another case this could not be done, even in chloroform narcosis (v. Centralbl. f. Aug., 1901, p. 111.) As a result it was necessary to perform a second operation, which consisted of cutting with a Knapp's knife through the lens capsule in the region of the pupil, which had closed again. I wish to remark that the pupil thus formed has remained through the four years since the operation. The boy, who was then 10 years of age, has since gone to school, and although he has to be careful, has made good progress. The vision is the same now as then, ½ to 1/5 normal field of vision.

If the second pupil closes again, an incision must be made with a Knapp's knife through the iris—after Cheselden's method, but from the anterior chamber—which forms a gaping pupil. I described this in my former article (*Centralbl. f. Aug.*, 1899, p. 249.)

This method is much more certain than the Wenzel's cataract extraction, recommended by A. von Graefe, where the knife enters through cornea, iris and lens and comes out through lens, iris and cornea. It is better also than the method of G. Critchett, mentioned by Schmidt-Rimpler, viz., to bore a tunnel through the opaque lens in several operations. The first method has the danger of a shrinking of the bulb; the second, the danger of increase of tension which can not easily be overcome on account of the narrow, unyielding pupil.

I will take this opportunity to make a few remarks on some points in connection with the mysterious and important sympathetic ophthalmia: (1) In 1895 (Centralbl. f. Aug., p. 80), **I described the fundal changes in sympathetic ophthalmia as consisting of numerous, small, round, bright spots in the periphery, which possess a remote resemblance to specific lesions, and are likewise found in the first diseased eye.

I find these in every case where the fundus is still visible or later becomes visible.

The case which I described at that time was one of a sixyear-old peasant girl who injured her left eye Oct. 16, 1893, with a bread knife and who was brought to me Dec. 1, 1893, with a sympathetic inflammation of the right eye. I did not remove the injured eye because it still possessed vision, which was fully as good as that of the other eye. This was certainly right. Both eyes have been retained.

^{**}A. von Graefe had noticed choroiditic changes before this, so he has the priority in this as in so many things.

In 1896 the injured eye had vision =0.4 for distance, and the other had 0.2. Five years later I found the eye unirritated, cornea clear (examined under magnification with the lens), irregular pupils, normal fields of vision and ability to read the smallest type. In addition, I found very small pigment deposits in the clear foci in the periphery. The child is healthy and gets along well in school.

In the tenth year after the beginning of the sympathetic inflammation, the following was found:

The right eye has a transparent cornea; pupil of medium size, slightly irregular in the greater part of the nasal half; round and slightly movable in the lateral half. A delicate bluish membrane, like a spider's web, extends from the iris into the pupil. The greater part of this is fairly translucent, and the disc is easily seen. A delicate connective tissue band is to be seen upon this. The middle of the retina is free. Downward, in the periphery, are numerous small, round spots. These, however, are no longer clear and unpigmented. Most of them show deposits of pigment, like targets, or piebald spots, which run together into masses, but are not pavement-like. The left fundus is not visible.

On both sides the smallest type can be read, although with difficulty; field of vision is normal.

Jan. 10, 1905, same findings. The girl, now 17 years old, works very diligently as a servant.

This is another example of how long fundal changes must be observed, if they are to be described correctly.

GLIOMA RETINAE, CLINICAL AND HISTOLOGICAL REPORT OF A CASE.

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SURGEON TO EYE DISPENSARY, ST. CHRISTOPHER'S HOSPITAL.

HISTOLOGICAL STUDY.

BY HAROLD G. GOLDBERG, M. D.,

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The extreme rarity of glioma of the retina renders it of interest to note the progress of individual cases. At Wills' Eye Hospital there has been observed but one case of glioma in over 5000 patients of all ages. This proportion remains nearly the same in several hundred thousand eye cases. In our experience at St. Christopher's Hospital for Children we have observed but one case in 3232 eye patients, the oldest being 16 years.

This patient, a female—aged 3 years, was brought to the eye clinic at the St. Christopher's Hospital for Children on March 11, 1902, having been referred from the medical clinic of the same dispensary by Dr. M. P. Boyle. The family history was entirely negative.

The mother stated that the child had diphtheria in April, 1901, and was treated with diphtheria antitoxin. Three weeks afterward the mother thought the right eye looked "glassy," and the child complained of dim vision. She was treated by the family physician without improvement, and two weeks later could see nothing with the right eye. The mother then consulted a "professor," a quack doctor. There was no improvement, and on March 11, 1902, the child was brought to the dispensary.

Upon examination it was at once noticed that the right pupil was dilated and immobile to light, the pupillary space showing a yellow grey reflex, a typical "cat's eye" reflex. The cornea, aqueous humor and lens were perfectly clear, as was the vitreous humor anterior to the uniformly yellowish grey mass, which occupied the major portion of the eyeball. The eyeball

was of normal size with normal tension. The iris was irresponsive to light, but acted consensually, equally and freely with the left eye, to light, accommodation and convergence.

Ophthalmoscopically the tumor presented a somewhat irregular greyish surface, with a few blood-vessels running over the surface. The retina and retinal vessels were not apparent. To view the left eyeground it was necessary to use the indirect method on account of the restlessness of the patient.

In the left eye the disc was found to be oval, 7x8 mm. long, axis at 90°, chorioidal ring all around, no gross lesion being determinable. The vision of this eye was apparently good. Immediate operation was strongly urged, but was refused.

Nothing further was seen of the patient after this first visit until Dec. 12, 1902, exactly nine months later, when the mother brought her again. It was then noticed that the right eyeball was greatly enlarged and protruding, causing exophthalmos and lagophthalmos; the sclera was apparently very thin and greyish in tint. The cornea was clear, the pupil widely dilated, the lens clear, but almost in contact with the very yellowish mass, which now filled the eyeball. The tension was elevated and ocular movements were greatly restricted in all meridians.

The child complained of inability to walk, was very peevish and irritable, and appeared debilitated. The mother stated that the child had had a very amiable disposition until a few weeks ago, since which time she had been gradually becoming more irritable and complained of being very weak. She had frequent attacks of vomiting, for which she was treated by the family doctor, who, the mother stated, had advised her to postpone the operation until something definite appeared in the eye. The visible failing of the child had determined the mother to come back to the hospital for advice. Immediate operation was advised as a forlorn hope, but a bad prognosis was given. As the mother would not be parted from the child, the operation was performed at home.

The enucleation was performed under ether anesthesia, no accident occurring. It was immediately noticed that there was a small, rounded and smooth protuberance about 3 mm. to the outer side of the optic nerve entrance. The tumor had apparently not ruptured the sclera completely. On account of the meningeal symptoms present previous to the operation, and in the absence of the apparent involvement of the orbit, no attempt at exenteration of the orbital tissues was made. Immediately after the operation there was considerable bleeding behind the conjunctival tissues, causing them to balloon out between the lids. A pressure bandage was applied.

After the operation the child was continually peevish, whimp-

ering most of the time, screaning whenever anything was done to displease her, otherwise she was very intelligent. She complained of inability to walk or stand, but when interested could readily walk about the room, and was very amiable for about three to five minutes, when she again began to worry and fret.

The wound healed nicely, showing a beautifully clean socket. The temperature remained normal. Vomiting without apparent nausea returned one week later. Noise, light or talking grew increasingly annoying to the patient, and two weeks after the operation the child developed convulsions, which, a few days later, caused exhaustion and death. No post-morten was obtained

HISTOLOGICAL STUDY

The tissues were preserved in the ordinary manner, embedded in celloidin, cut and stained with hemotaxylin and cosin and various special stains for neuroglia tissue, connective tissue, etc. An examination of the tissues revealed the following conditions:

Horizontal meridional section.



Macroscopy. Cornea normal. The anterior chamber was deep, lens small and almost plano-convex; the pupil was dilated. The ciliary bodies and iris were atrophic. The growth filled the vitreous chamber and occupied three levels. It was lobulated and fatty in appearance. Various areas of caseous

change could be plainly seen. The retina was pathologically detached. The growth appears to have been subretinal and broken through at the papilla. The sclera was thin.

Measurements:

Horizontal equatorial, 24 mm. Vertical equatorial, 24.5 mm. Anterior-posterior, 26 mm. Diameter of disc, 2.5 mm.

Microscopy. The cornea is normal. The anterior chamber is deep and free of exudate. The lens shows beginning cataractous changes posteriorly. The capsule remains intact. The iris, extremely atrophic, shows old fibro-cicatricial changes. It contains few mononuclear leucocytes and proliferated connective tissue cells in abundance. The iris has been pushed forward, blocking out the angles of the anterior chamber. The retinal pigment layer of the iris is enormously thickened, absolutely opaque, and has become detached from the body. The ciliary bodies are atrophied; practically nothing remains of the processes but the dense, thickened, opaque retinal pigment covered by the pars ciliaris, the whole process being drawn out into a dense pigmented point. The body is also atrophied and contains an excessive number of pigmented connective tissue cells. Occupying a space just posterior to the lens are the contracted remains of the greatly modified vitreous, which is degenerated. slightly granular, and contains a few polymorphonuclear cells and large, round, deeply pigmented granular cells, the walls of which do not stain and are very indistinct. The nucleolus can not be made out from the excess of pigment present; in fact, the general form and more or less circumscribed outline are the only evidences of cell structure; they probably represent a stage in the degeneration of the glioma cell. Healthy glioma cells are also present sparingly. Anteriorly the chorioid shows some form and structure, but is atrophic and has been invaded throughout by a great number of pigmented cells that have proliferated to form large and small buds. The pigment forms a dense, more or less regular line that continues posteriorly, There is also a proliferation of the fixed connective tissue elements. Anteriorly the internal surface of the chorioid is covered with the cells of the growth. Posteriorly the chorioid has become detached and the growth is partly subchorioidal. At this point the chorioid that has remained in position is almost completely destroyed and shows only amorphous pigment, pigmented connective tissue cells and large ectatic blood-vessels, the walls of which have undergone hyalin change. That part of the chorioid which covers the advancing surface of the healthy growth is represented by a thin line of pigment composed in part of large, round, granular cells that at times resemble the buds previously described. In this location the health-ier portion of the developing growth lies between the modified capillary layer of the chorioid and what might be properly termed the pigment layer and vitreous membrane of the same coat, because here both surfaces of the growth are covered by a layer of pigment, part of which is obviously derived from the chorioid. This appearance was mistaken for detached retina in the macroscopic description.

Anteriorly the retina can at times be made out, consisting of the greatly thickened nuclear layers which can be differentiated in this region. Here the appearance is rather curious, both surfaces of the retina being apparently covered by a layer of pigment, which practically encloses the growth at this point. The layer has undoubtedly been split in two, thus making the histological origin of the growth almost impossible, or at least difficult to determine. The growth apparently springs primarily from the internal nuclear layer, and was originally of the exophytum variety. A convincing point in favor of this view is the fact that the layer of pigment cells covering the advancing surface of the growth appears to be epithelial in type, and lies upon a fairly well marked basement membrane, which is homogeneous in structure and non-staining and which may be considered as the vitreous membrane of the chorioid.

The growth (glioma) occupies the vitreous chamber, almost entirely filling it. It presents various stages of retrograde metamorphosis and is but poorly nourished by blood. The blood spaces are enclosed within the growth cells, which form irregularly disposed walls, there being no perfect vessel walls, these spaces contain blood and rounded by healthy cells. The cells are round and sometimes oval, of medium size, with very small amount of protoplasm and relatively large granular nuclei. Many of them are pigmented and free pigment is also seen; the intercellular substance is scant, occasionally reticulated and stained faintly with eosin: fat detritus and a few polymorphonuclear leucocytes are seen. In some places the growth has been divided into septa by spindle-shaped connective tissue cells, both pigmented and non-pigmented. The appearance is particularly well marked in the region of the nerve and should probably be called a fibroglioma. The connective tissue cells come from the sclera, the layers of which have been torn up in several places, with an increase in the cellular elements by proliferation. The appearance. however, is also caused by an almost regular series of thin homogeneous non-staining lines which stratify the growth at this point. These lines may be traces of neuroglia structure. Mueller's fibres, which have become hyperplastic and folded in the process of growth.

The only other traces of retina present are a few cells that resemble degenerated ganglion cells, but this is not definite. The healthy cells of the growth are divided in places into large and small islands by the faulty staining ones, which represent a caseous degeneration of large masses. The nerve tissue has been entirely replaced by the cells of the growth, which are enclosed in the more resistant sheath.

The retrobulbar tissues show evidence of having been invaded.

THE PATHOGENESIS OF SPASMUS NUTANS. (ZUR PATHOGENESE DES SPASMUS NUTANS*).

By Dr. A. SCHAPRINGER.

TRANSLATED BY CLARENCE LOEB, A. M., M. D., ST. LOUIS.

Ever since Caille¹ made known his experiment that it was possible to inhibit the movements of the head by closing the eves, it could have been considered certain that this symptom complex was due to movement-impulses caused by an abnormal irritation of fixation impulses, or in other words that spasmus nutans had an optic foundation. The basis for this opinion was strengthened by Raudnitz's report upon a comparatively large number of observations where he found that in addition to certain constitutional conditions of no importance in this connection (Rachitis), the distinct and important condition of spasmus nutans was caused by continuous residence in a dark chamber. According to Raudnitz, somewhere in the dark room there is a light spot which draws the attention of the child. The continued staring, very frequently while in an uncomfortable position, causes a tiring of the neuro-muscular apparatus concerned with the fixation impulse, and as a result of this tiring there appear the nodding and shaking of the head and nvstagmus.

This theory of Raudnitz, that spasmus nutans is caused in young, predisposed children by a long residence in dark rooms and constant looking at a bright spot, seems to me without doubt a correct one. Only I am not satisfied with exhaustion (caused by uninterrupted looking) as the connecting link with the antecedent, viz., residence in a dark room, and the final result, viz., the appearance of the spasmus nutans. Of the many reasons that speak against exhaustion being of any considerable importance in this connection, I will mention here only the unilateral nystagmus which frequently acompanies spasmus nutans. This phenomenon is in glaring contradiction to the exhaustion theory.

In the following remarks, I will endeavor to show that the connecting link resides elsewhere than in exhaustion. I hope to

[•] From Centralblatt für prakt. Augenheilkunde, 1905.

¹ Caillé-Archives of Pediatrics, 1890.

²R. W. Raudnitz—Zur Lehre vom Spasmus Nutans. (Jahrb. f. Kinderh. B. 45, 1897.)

support the Caille-Raudnitz empirical findings with a theoretic cornerstone and to round it off satisfactorily.

In the first place we must remember that invariably in cases of true *spasmus nutans* the eye has been found entirely normal as far as the ophthalmoscope could show.

How do we find the irritability of the different regions of a normal retina when the eye has been kept in the dark for a long time and has had its attention directed upon a bright spot of not too great size and of medium intensity? What does physiology teach us?

Let us see what W. Nagel says: "According as the image of the feebly illuminated spot falls on the fovea or extrafoveal portion of the retina, its brightness diminishes or increases. In the first case it is even very easy for it to disappear entirely. But, even in pure indirect vision, the brightness changes considerably as soon as the person observes the spot. In twilight the fatigue is much greater than in daylight, and a feeble illumination, which is observed quietly with indirect vision, becomes, after a few seconds, evidently less district. The slightest movement of the eye brings back the original brightness."

So much for Nagel.

The children under consideration, who have been kept in a dark room, will see the bright spot that claims their attention much better if its image falls, not upon the fovea itself, but upon a neighboring part, or as it is otherwise put, if they fix eccentrically. When it falls on the fovea itself, the perception of the image is at any rate less, and, under certain conditions, may be nil. If the subjective illumination of the eccentric image is to be of any duration, the places upon which it falls must be quickly changed. A labile eccentric fixation best serves the purpose of clear vision, and we must conceive that this labile eccentric fixation employed by the child, at first instinctively and ad hoc, results on account of a continued repetition—association, the so called "habit." The movement of the head and the nystagmus increase to produce the ability of the visual axis and are clinically of equal value.

This can be expressed in a few words—but only in a symbolical way—by saying that there is in the brain a centre for labile eccentric fixation. If the child is brought into daylight after weeks or months, the situation is similar to that in Goethe's "Magician's Apprentice." and it takes an appreciable time until the eyes become adapted to the light and lose the teleologic head and eye movement. Acording to the reports of many observers, the end is invariably a cure.

The appearance of unilateral nystagmus in spasmus nutans is to be explained as follows: In early life it easily happens that

one of two physically equal retinal images is not perceived and is disregarded by the mind, as is clearly shown in the typical strabismus convergens which appears in childhood. In those children where favorable internal and external conditions for the genesis of spasmus nutans are present, it often happens that the central perception apparatus, the mind, directs its attention upon the retinal image of only one eye; for example, the left, and disregards that of the right. In consequence of this the impulses of labile eccentric fixation which go out from the center, pass only to the left eye. In the age of life under consideration, the law of equivalent motor innervation of the eves does not possess its full force, and a unilateral nystagmus can appear, either in the form that only the left eve oscillates or it oscillates more than the other, therefore when unilateral nystagmus accompanies spasmus nutans—paradoxical as it may sound— the eve which oscillates alone, or most perceptibly, is to be considered as the "fixing eye," as that one whose retinal image is perceived and mentalized.

I find a support of this view in an observation made by Hermann Schwarz on a 10 months old child with unilateral nystagmus.3 The left eye was the one that especially oscillated. The movements were continual and rather extensive. The right eve oscillated somewhat, but the movements were less extensive and separated by greater intervals of time. When this child was taken from the back of the room to the open window, both eyes were held wide open, but he held the left hand before his face in order to cover the eve of that side. He apparently desired to shield himself from the too strong entrance of light. The oscillation of the bulb acted here as a multiplicator of the light irritation, whence the discomfort of the child. The light in itself was not strong enough to cause a feeling of discomfort in a motionless eye. The action of the child showed that he perceived with the left retina. Binocular vision was excluded with certainty, for it would mean a continual perception of oscillating double pictures which moved in different visions—there was a difference in altitude of the corneae. One eve, therefore, was used for perception, and as the observation of the conduct of the child at the window showed, the perceiving eye (i. e., the "fixing") was the one that oscillated most.

In spasmus nutans, in addition to the nystagmus, there occasionally appears a transitory strabismus, due to a spasm of a rectus or oblique muscle. This muscular spasm is to be regarded as a "confident movement" in no way contrary to the

³ Schwarz—Wissensch. Zusammenkunft Deutscher Aerzte in New York, May 27, 1904. (New York Medical Monatsschr, October, 1904, p. 451.)

rule. I cannot, however, refrain from remarking that where binocular vision has disappeared and where its restoration would not be desirable, a strabismus may serve a certain purpose, since by this position of the bulb an incipient tendency towards restoration of binocular vision can be more easily overcome.

Several observers have stated that when the head is held fast the nystagmus increases. To explain this we can assume that the so-called center for labile fixation has two subsidiary centers, one for the head and the other for the ocular movements, both of which exert a certain amount of angular movement upon the visual axis. If one center, from some reason or other, cannot furnish its quota, the other acts vicariously with increased intensity. Whoever denies this explanation as too fantastic should furnish another from the theory of fatigue of the visual apparatus.

Although the careful reader will find it superfluous, I should like to add in conclusion that wherever nystagmus was mentioned above only the nystagmus accompanying spasmus nutans was meant, not nystagmus in general.

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EXCISION OF THE SUPERIOR CERVICAL GANGLI-ON IN INFLAMMATORY GLAUCOMA.*

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Excision of the superior cervical ganglion of the sympathetic for glaucoma is an operation which is still sub judice. It is only a little more than seven years since it was first performed for that purpose by Professor Jonnesco, but evidence has accumulated during this time which would seem to show that there is some basis for the theory of the central causation of this disease, that in certain cases the removal of this ganglion is the proper treatment, and that in other cases it is of little or no benefit. I do not propose to inflict upon you any resume of the literature on this subject. Much has been written, largely collations of the writings of others, and the statistics of success and failure have been tabulated. Brilliant results and failures stand opposed to each other, as may naturally be expected in the early history of an operation performed in many cases as a last resort to check a disease the etiology and pathology of which cannot be said to be perfectly understood. We have primary glaucoma, which arises without obvious cause, and secondary, dependent on some prior pathological condition of the eve. We have the inflammatory form, either acute or chronic, and the non-inflammatory or simple. The latter is commonly considered a true form of glaucoma, but there are those who still wonder whether von Graefe was not right when he pronounced it a distinct disease. Inflammatory glaucoma is usually curable by iridectomy, simple glaucoma is not. Too often the history of a case of simple glaucoma is one of steady progress toward blindness in spite of all attempts to check the disease. It is natural therefore that the hope of curing or checking the simple form has inspired most of the excisions of the superior cervical ganglion which have been performed for this disease. In 38 of the 68 cases collated by Wilder, in 48 of the 114 cases presented by Rohmer, the operations were performed for sim-

^{*}Read before the Ophthalmological Section of the New York Academy of Medicine, Oct. 16, 1905.

ple glaucoma. Its estimated value in this form is shown by the statement that 15 of Wilder's 38 cases were reported as improved, 5 as temporarily improved, and 36 of Rohmer's 43 cases were said to be improved. Loring, in his paper on cervical sympathectomy for simple glaucoma, gives 70 per cent. of improvement for three months or longer with no record of relapse. But the following case proves three months to be much too short a time for observations of value to be made. It is quite probable that three years at least will prove to be necessary. The ganglion has been removed less often and with a smaller proportion of good results after an unsuccessful iridectomy for inflammatory glaucoma, either acute or chronic. and each individual case needs to be carefully studied in order that we may learn to distinguish between those cases in which this operation is indicated and those in which it is not. cannot claim to have found this differentiation, but in the hope that I may contribute a little toward the solution of this important question I beg leave to report the following case:

Mrs. A., 48 years old, consulted me Dec. 14, 1903, because her vision had been slowly failing for two years, particularly for near work. She had suffered constantly from headache for years, and sometimes her eyes were painful. At first I understood that she had never seen halos about artificial lights. but months later she stated that she had seen them before she consulted me. The vision of her right eve was between 20/40 and 20/30, and was not improved by glasses; that of her left eve was 20/15 with +2 dioptres spherical. With +1 dioptre over her right eve and +3 over her left the near point was at eight inches; she could see the finest type and could read and sew with comfort. The ophthalmoscope revealed a wellmarked glaucomatous cup of the right nerve, a lesser one of the left. The right field was contracted nasally, somewhat above and below, but not temporally. The left field was slightly contracted above and below. The tension of each eve was normal.

These physical signs proved the case to be one of glaucoma; the history, the absence of all signs of inflammation and the normal tension seemed to indicate that it was one of the simple form. Nevertheless I prescribed a weak solution of eserine for constant use and instructed the patient to be ever on the watch for such symptoms as haziness of vision, colored rings about artificial lights, redness, or any other trouble of the eyes which might point to an inflammatory nature. I was enabled to see the patient frequently, but the only point I learned in favor of a diagnosis of chronic inflammatory glaucoma was the statement that she had previously seen colored rings about lights.

The eserine though in weak solution, kept the pupils contracted to an estimated diameter of 1 mm. I wish to call attention strongly to the fact that the glasses prescribed for distance and for near work relieved all the symptoms which had led her to consult me, with the exception of the headache, and this might be accounted for by the presence of other bodily ailments.

The condition remained unchanged until June 2, 1904, when her reading glasses needed to be changed to R.+1.25; L.+3.50. The right field was possibly a trifle smaller, but not noticeably so.

On June 30 I removed a small foreign body from the right cornea. The symptoms of irritation differed in no way from those usually caused by the presence of a cinder in the eye, but they persisted after the removal of the offending substance, and on July 5 the tension was found to be increased. The next day there was ciliary injection and plus tension of both eves and an iridectomy was performed on each. Both irides tore easily and there was some hemorrhage from the cut vessels of the left. Both eves seemed to progress favorably for two days after the operation. There was very little reaction, the wounds closed and the pillars of the colobomata were free. The left eve went on to an uninterrupted recovery and has given no further trouble, but on the 9th, three days after the iridectomy, an attack of acute glaucoma supervened in the right eve which rapidly reduced the vision. The eyeball became red and very painful, the tension was +3, while the anterior chamber apparently disappeared. Hot applications and a liberal use of escrine proved of no avail, so during the morning of the 12th I performed another iridectomy to the temporal side of the first. The incisions for both iridectomies were made well back, the second as far into the sclera as it could well be made, and about one-third of the iris had been removed after the second operation. The immediate result was simply relief of the pain, the tension was not reduced and the eye remained red. No aqueous was seen to escape at the time of the second iridectomy and the anterior chamber did not appear to reform, although by means of a small pencil of light a very thin layer of aqueous seemed to me observable between the cornea and the lens. and a cystoid cicatrix later appeared at the site of the incision. Although the lens seemed to lie in contact with the posterior surface of the cornea for over a month it did not become cataractous.

Treatment with eserine was renewed soon after the second iridectomy, but this drug now produced an effect diametrically

opposite that expected. Each instillation was followed by severe pain in the eye exactly resembling, the patient said, the pain of glaucoma. Its use was therefore discontinued and various antiphlogistic measures were tried in vain. During this interval of one month several gentlemen saw this patient with me in consultation. Their advice varied from letting the eye alone to follow its own course to immediate enucleation, but the emphatic remark of one surgeon that if I could find some way to reduce the tension-he believed the eye might recover encouraged me to undertake the removal of the right superior cervical ganglion on Aug. 12. At this time there was no perception of light in the nasal part of the field, while on the temporal side fingers could still be counted.

It hardly seems necessary to describe minutely the technique of this operation. Its performance is not difficult for any one who thoroughly understands the anatomy of the upper part of the neck, but it is not to be undertaken lightly by anyone else. The primary incision may be made along the anterior or the posterior border of the sterno-cleido-mastoid. Each has certain advantages and disadvantages. In this case I chose the anterior incision, downward from the angle of the iaw, because the patient was very stout and about an inch of adipose tissue had to be cut through before the border of the muscle could be reached. Several of the superficial cervical lymphatic glands were enlarged and one as large as a pecan nut was removed. I followed the course mapped out by Ionnesco, passed through the sheath of the great vessels, which were drawn aside, exposed the sympathetic nerve, dissected it free, seized it with a clamp below the superior ganglion, severed the branches of the latter with scissors, divided the nerve close to the skull and then just below the clamp. The patient recovered readily from the operation.

The effect on the eye developed slowly. Sixteen hours after the operation there was a slight ptosis of the upper lid, a slight facial paralysis, and less redness of the eyeball, but the tension was unchanged. Three days later the tension was about the same, the eyeball had receded slightly and the ptosis was apparent. All pain and tenderness had disappeared. Ten days after the operation the tension had fallen somewhat and the angry redness of the eye had given way to a pinkish suffusion of the conjunctiva which persisted together with some lachrymation. Before the first of September the tension had become normal. When discharged from the hospital there was a slight recession of the eyeball, some ptosis, a mild degree of suffusion of the conjunctiva and lachrymation, normal tension, no pain or tenderness, an ex-

tremely shallow anterior chamber, a cystoid cicatrix at the site of the second iridectomy. Vision equalled perception of light.

On Nov. 25 the vision of the right eye was perception of light, there was a slight trace of anterior chamber, no suffusion of the conjunctiva, some slight traces of redness in places about the cornea, no lachrymation, less marked ptosis, no headache. March 17, 1905, the vision of the right eye had fallen to 0. On April 27 the eye was blind, hard and painful and was therefore enucleated on the following day.

The excised ganglion and the cervical gland were examined by Dr. Zabriskie, who has kindly furnished me the following report:

Comparatively few cells contain increased pigment.

No definite changes in the interstitial tissue are to be seen, except here and there a slightly thickened capsule, which apparently distorts the cell bodies. This is a rather frequent occurrence.

There is a remarkably constant excentric displacement of the nuclei and the nucleolus is often seen at the periphery of the nucleus; in fact relatively few cells have a central nucleus. Chromatolysis of varying intensity is present in nearly all the cells. Where this process is moderate the Nissl bodies appear only at the periphery of the cell while the central masses are less deeply stained and have a finely granular appearance. In many cells the large Nissl bodies have completely disappeared. Vacuoles do not appear.

No hemorrhages found.

As the tissue was prepared solely for the purpose of studying the cytological changes a satisfactory stain of the myelin sheaths could not be made and hence we are not prepared to say whether there were any definite pathological changes in these structures.

A comparison of our findings with those already published shows that they correspond most closely to those of Wood, of St. Luke's Hospital, and also that as yet the data are too meager to warrant definite conclusions as to the causal relationship to glaucoma.

The enucleated eye was examined by Dr. Oatman, to whom. I am indebted for the following report:

Iris and cilary body very atrophic. Anterior chamber abolished by total anterior synechia. Lens cataractous and closely applied to the posterior surface of the cornea. Here the interposing iris is represented by a line of pigment. The retina is degenerated in all its layers. Optic nerve head is deeply

excavated. The excavation is partially filled with organized inflammatory products.

This case presents several interesting features aside from the result of the sympathectomy. The danger that a person suffering from glaucoma may be fitted with glasses without suspicion that any disease exists has been mentioned. The fact that in this case the disease remained stationary for six months shows how apprehension may be fulled to rest, and also illustrates the difficulty sometimes experienced in differentiating simple glaucoma from the chronic inflammatory variety. The appearance of inflammatory symptoms coincidentally, with a trivial injury of the cornea raises the question whether or not the former was awakened by the latter. An attack of acute glaucoma after an iridectomy is rare, and that operation is considered usually to be both curative and preventive of such an occurrence. Such cases have been reported, however; in some a second iridectomy controlled the attack, in others the free use of eserine sufficed, but in most cases absolute blindness supervened. Both of these measures were tried and failed in this case, and after the second iridectomy the effect of the eserine was the opposite of what it had previously been and seemed to temporarily intensify the glaucoma. These were all unusual features, but none of those which appeared before the iridectomy was such as to suggest that the treatment ought to differ from that which has produced excellent results in many thousands of cases and is ordinarily followed.

The physiological results followed the operation slowly. The intraocular tension did not fall immediately, but gradually sank to normal in the course of a month. In several minor respects there were variations from what has heretofore been obtained. Rohmer states that an immediate result of the operation is a blanching of the face and eye with a slight slowing of the pulse. In this case there was a partial blanching of the eve. but no blanching of the face or slowness of the pulse was observed. Paralysis of the vocal cords has often been met with, but the only sign of this here was a slight hoarseness or weakness of the voice which appeared twentyfour hours after the operation and lasted not over thirty-six hours. No difficulty whatever was experienced in deglutition. Some retraction of the eveball, ptosis, suffusion of the conjunctiva and a slight lacrymation were the only undesirable effects produced.

In this desperate case I consider that I would not have been justified in refusing the patient the possible benefit of the operation, in spite of the fact that failure was only too probable,

but the slow diminution of the tension after it had been performed, the absence of any definite pathological condition in the excised ganglion and the further progress of the disease to total blindness of the eye prove to me that it was a case in which the glaucoma was not dependent on any pathological condition of the sympathetic nervous system, and was not affected by the removal of the superior cervical ganglion.

If I had performed this operation at the time the patient first came under my care, when I believed the case to be one of simple glaucoma, I might have believed for a while that it had been successful, but now there is no reason to believe that such an operation would have had the slightest influence on the course of the disease. The disease might have remained stationary for six months, just as it did without the operation, and then the explosion would probably have followed in the same manner as it did, because the pathological condition was independent of the sympathetic nervous system.

This case, taken in connection with the usually unfavorable results which have been obtained after similar operations to relieve acute or chronic inflammatory glaucoma, seems to me to show that the presence of inflammatory symptoms of the faintest degree indicates a local condition in the eve productive of glaucoma, which is not dependent on, or influenced materially by the sympathetic nervous system. On the other hand if we have in simple glaucoma a condition which is materially influenced by the removal of the superior cervical ganglion of the sympathetic, as the published accounts would seem to indicate, this must be a disease of essentially different nature from chronic inflammatory glaucoma, as was claimed by von Graefe, and the question of differential diagnosis. diagnosis which is acknowledged to be extremely difficult, becomes of paramount importance. Unfortunately most of the published cases were reported after the lapse of too short a time to permit of any reliable deductions regarding the permanent success of this operation in simple glaucoma, or the possible differentiation by its means of the latter as a distinct disease.

OPERATION FOR THE RELIEF OF CICATRICIAL ORBIT.*

By James Moores Ball, M. D., st. Louis.

drofessor of ophthalmology in the st. Louis college of physicians and surgeons.

A patient who has had an eyeball removed and who finds at an early or at a late date that he cannot wear an artificial eye, is truly in an unfortunate predicament. It is only within the last few years that attempts to relieve such a condition have been successful. In this paper I will not take into account those simple cases in which a single adhesive band of limited extent unites the upper eyelid to the stump—cases which are easily relieved by severing the attachment and inserting an artificial eye, the same to be worn constantly for a few days and nights.

I refer more particularly to those cases in which either the upper or the lower cul-de-sac, or both of them, is practically absent. In such a case contraction of all the tissues occurs, and the space at our disposal is often smaller than the fingertip. To wear an artificial eye under such circumstances is manifestly impossible, unless we do like the surgeons of the sixteenth century, who, like Pare, had eyes made to be worn outside of the lids and held in position by a long tail-like projection which fitted over the corresponding ear.

In the past eighteen months I have operated successfully on two cases of cicatricial orbit.

Case 1.—Miss M., aged 31 years, was referred to me by the late Dr. James A. Close, of St. Louis. When six weeks old this lady had an inflammatory condition of the right eye. The eye burst and its contents escaped. When 9 years old she began to wear an artificial eye. Six years ago the socket became contracted. She was operated by Dr. Close, who cut some cicatrical bands, after which for a time she was able to wear an eye in a misfit fashion. In June, 1904, she was no longer able to wear the eye, the space between the lids being not larger than a dime. I found the fornices practically obliterated, the lids being adherent to the orbital stump. On

^{*}Read before the St. Louis Medical Society, Oct. 7, 1905.

July 5, 1904, under chloroform anesthesia, I dissected the lids freely from the orbital tissue and applied Thiersch grafts, which were held in position by means of silver plates perforated by sutures. This operation was successful in restoring the upper cul-de-sac, but not the lower one. To restore the latter a different procedure, known as Maxwell's operation, was required. This, in short, consists in making a lower cul-de-sac of the loose skin of the lower lid, and can be understood by reference to the accompanying diagram.



MAXWELL'S OPERATION FOR ENLARGING THE SOCKET FOR AN ARTIFICIAL EYE.

Incisions are made through the skin from C to D. The piece thus included is dissected from the subcutaneous tissue, except the area from x to y, which remains for anchorage. An incision, a, b, is made in the orbit. The lower lid is undermined. The fiap is pushed beneath the lower lid. AA is then stitched to A, and BB to B.

After this operation the patient was able to wear an eye with comfort. A year has passed and she has no trouble.

Case 2.—Mrs. F., an elderly lady, was sent to me by Dr. M. J. Short, of Rolla, Missouri. The right eye was enucleated fifteen years ago by the late Dr. S. Pollack, of St. Louis. For two years Mrs. F. has been unable to wear an artificial eye. I found that the upper cul-de-sac was contracted to one-half the normal size. The lower cul-de-sac was absent, the lid showing a pronounced ectropion.

On March 12, 1905, under chloroform anesthesia, I made the Maxwell operation on the lower lid. Then, at the same sitting, the upper lid was dissected to the orbital margin. A

^{[*}Maxwell, P. W.: Operation to Enlarge Socket for Prothesis, Ophthalmic Review, May, 1903.]

large artificial eve was introduced. It was immediately withdrawn, covered with large Thiersch grafts and reintroduced. It was kept in place for ten days. At the end of this time it was removed for a few moments. The grafts united kindly and this lady now has a large space for an artificial eye which she wears with comfort.

It may interest you to know what has been done in this branch of surgery. In speaking of a similar condition, known as symblepharon (adhesion of the lid to the eveball). Professor Czermaki writing in 1893. said: "If we now turn to the operative attempts at relieving this condition we enter upon a very cheerless field, rich in experiments and failures. For a very long time the surgical art has been endeavoring, and up to this time with very little success, to conquer the rebellious forces which irresistibly try to reunite the separated parts."

Since that time, instead of employing the transplantation on the lid-surface of skin flaps from the cheek or temple, or Wolfe flaps, or grafting rabbit's conjunctiva or mucous membrane from the mouth, ophthalmic surgeons have employed Thiersch grafts with a fair measure of success. Such grafts form an ideal tissue for lining the wound surface of evelid and eveball in cases of symblepharon, and they form the most suitable means of restoring space for the artificial eye in cases of cicatricial orbit.

The reports of Hotz², Morton³, May⁴, Axenfeld⁵, Lindstroem⁶, Natanson⁷, and Woodruff⁸, whose cases have been published, and my unpublished ones, show admirable results. Since the same principles apply in cicatricial orbit, I feel that such cases are now legitimate ones for surgical treatment.

Weeks has recently reported cases successfully operated by sewing Wolfe flaps to the periosteum of the orbital margin. This is a very tedious and complicated procedure. After the flap has been anchored a suitable plate is placed in the cul-desac and is kept there until the time arrives for the insertion of the artificial eve.

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PIGMENT SPOTS IN THE CORNEA.*

By Dr. L. Steiner, Soerabaya, Java.

TRANSLATED BY CLARENCE LOEB, A. M. M. D.

Pigment spots in the conjunctiva are much more frequent here than in Europe. On the other hand, pigment spots in the cornea, even here among the colored races, are very rare. In unpigmented Europe, they would be scarcely found. As far as I can tell from the rather scant literature at my command, they have never been described. I have twice seen pigment spots in the corneae of Javanese.

In the first case, which I saw 12 years ago, I found, in a young man, at the internal inferior corneo scleral margin of the left eye, a roundish naevus pigmentosus of about 1½ mm. diameter. Nearly about 1½ mm. temporally and superiorly from this nevus, in absolutely transparent corneal tissue, was a small brownish-black spot, ½ mm. in diameter at the most. The cornea everywhere was smooth and otherwise normal. There was, however, trachoma of the upper lid. It should be mentioned, also, that a third, small mass of pigment was to be found in the same eye, on the ocular conjunctiva, 4 mm. nasally and upwards from the corneal margin.

The second case, which I saw last week, is as follows:

Hady Hassim, Javanese, about 30 years of age. On the skin of the face were very numerous pigmented areas. homa of both eyes. The conjunctivae of both eyes were reddened, thickened and covered with granules and papillomatous masses, and discharged pus freely. The cornea was in part transparent: elsewhere clouded by the trachoma. delicate vessels ran to the more clouded parts, but there was no distinct pannus. On the inner third of the left cornea was a distinct, irregularly round, pigmented spot about 4 mm. in diameter. Its inner border coincides with the corneo-scleral border, at one place extending beyond it ½ mm. On closer examination, it consists of a group of small confluent spots. which are clearer at their margins than their centers, causing the color to be irregular and the border serrated. Furthermore, close to this border are very small black spots, which have no direct connection with the main spot, and on the ocular conjunctiva, about 2 mm. from the corneal spot, is a pigment area of the size of a pin's head, whose color and appearance correspond exactly with the corneal area, and whose connection therewith is shown by numerous small spots lying between. The pigment lies in the superior layers of the cornea; whether

^{*}From Centralbl. F. Prakt. Augenheilk., October, 1905.

it is in the lower layers or not cannot be determined on account of the pronounced pigmentation. There was no scar from trauma or tatttooing, no pterygium that could have brought the pigment from the conjunctiva, and no synechia that could indicate an origin of the pigment from the iris. The cornea is apparently of equal thickness everywhere, and the anterior chamber is of normal depth.

In order to obtain an insight into the structure of this corneal spot, a tiny, flat, wedge-shaped piece of its surface was removed with a cataract knife and placed under the microscope. After its removal, the floor of the wound was still dark brown. The specimen comprised only the most superior layers of the spot. It was too small to be cut into sections, and therefore cannot answer many questions. The findings were as follows: So far as could be determined, it was composed only of epithelial cells and pigment. The boundaries of the epithelial cells are visible at the thin border, where only the most superficial layers are present. At this place, there is an unpigmented zone which shows that the most superficial layer is free from pigment. Internally, as the section becomes thicker, there appears a large amount of brownish-black pigment, allowing the epithelial cells to be seen only occasionally. The pigment is arranged in many different ways. In places it is in larger or smaller irregular granules and clumps, scattered through the entire tissue, grouping itself frequently, at the border of the cell, in dark lines. Often it seems to form itself into round cells. Frequently the granules and clumps arrange themselves to form cloud-like figures. Occasionally, long, more or less thick, and often branched lines extend for long distances through the field. Finally, numerous, stellate pigment cells are present—in which frequently an unpigmented nucleus is to be seen, and whose long, branching projections extend in all directions intertwining with the structures described above.

Although the conclusions to be drawn from the microscopic examination are very unsatisfactory, still it is clear that the pigment lies in the cornea itself, and is in so close relation to the elements thereof that there is no possibility of their having been artificially produced by tattooing, pterygium or synechiae.

The patient claims that the black spot has been visible only in the last few years. I have noticed that trachoma frequently causes, in the Malays, peculiar pigment spots in the conjunctiva, which are to be distinguished from the ordinary nevus, or it may cause scarcely visible collections of pigment to grow into large black spots.* It might be thought that this

^{*}Ueber das Vorkommen von Pigment in der Conjunctiva der Malayen. Geneeskundig Tijdschrift van Nederlan-Pigmentflecke in der Bindehaut der Malayen. Centralbl. f. prakt. Augenheilk., July, 1898.

was a case of a trachoma spot. On account of the close his tologic and embryonic relation between cornea and conjunctiva it would not be strange if the black spot which trachoma so often causes in the latter would occasionally appear on the former. This explanation does not, however, appear to me to be correct, because the trachoma spots appear exclusively on the palpebral conjunctiva and spare the ocular. I think that the spot is congenital, but was unnoticed as long as the cornea was healthy and transparent and the color agreed with that of the underlying iris. Only after the trachoma made the cornea milky and thus produced the needed contrast was the spot noticed.

HYDROPHTHALMOS, GLAUCOMA AND IRIDEC-TOMY.*

By Dr. Schoen. Leipsic.

1905.

TRANSLATED BY CLARENCE LOEB, A. M. M. D.

In the last Ophthalmologic Congress, a new operation for glaucoma was recommended. I was greatly astonished to observe that there was no outburst of indignation on the part of the supporters of iridectomy, especially Leber, such as greeted me when I proved, anatomically, that iridectomy did not and could not cure glaucoma.

Is iridectomy then no longer the certain remedy—to doubt whose efficiency is heresy—so that it is necessary to find another?

The new operation is likewise to be credited with few cures, nevertheless we must recognize as progress the doubt of iridectomy which lies in the mere discovery and advocacy of the new method. The glaucomatous anatomic changes may be prevented and checked by removal of the cause, but no operation, whatever, can wipe them out again.

This reminds me of a case where iridectomy preserved an eye for twenty-five years, of course not on account of the iris section, but in some other way. Occasionally, by way of

variety, I advocate the at present despised iridectomy.

The case was one of hydrophthalmus congenitus, a boy 4 years of age. I made a bilateral iridectomy, downward, on account of the inaccessibility of the superior corneal margin Both operations passed off perfectly. Nevertheless the disease progressed. One year later I made a bilaterial iridectomy upwards. The right side healed perfectly, but on the left side a cystoid scar was left. After hesitating some time as to whether I should puncture it, I fortunately decided not to, induced by a case of a woman with glaucoma, where I, then assistant to Horner, opened the conjunctival vesicle. It is true that perfect cicatrization followed, but the woman blamed me for the gradual diminution of her already impaired vision of her only remaining eye—the other was already blind from glaucoma.

In the case of bupthalmus, the disease progressed in both eyes unimpeded by the iridectomies. The eyes became larger, the disc became excavated and the circle of the ciliary body

^{*}From Centrabl f. Praktische Augenheilkunde, October, 1905.

became larger. The eyes had a myopia of 10 D; the boy could read and write. Where the iris was excised, the iris angle, zonula fibres and lens capsule could be seen. The lens gradually detached itself from its capsule, shrank and retracted upwards. The process took place much quicker in the right eye, where both iridectomies had been perfect, so that this eye became blind when the boy was 10 years of age. Thereupon opacities in the vitreous were to be seen on examination.

The left eye progressed apparently in the same way, but much more slowly. Even now, 20 years after the right eye became blind, it sees, and is able to read print. An exact test was not made, in order not to make the patient restless. Emmetropia now exists, since the patient looks past his lens, but there are opacities in the vitreous. The dissimilar course and the retention of vision undoubtedly is due to the cystoid cicatrization. The conjunctival vesicle is very large. Its contents are almost as much as that of the eye itself, certainly as much as that of an ordinary eye. It causes a scar each time that it is seen after a period of time.

The size of the vesicle is apparently increasing. I have refrained for years from retracting the lid, in order not to burst the vesicle. That was done two years ago by the patient himself, when he accidentally ran against a door. The first glance at the upper lid showed that the vesicle was gone. I regard it as a special service that I did nothing, not even opening the eye. Bandage and rest in bed were all the treatment. The single possibility of restoring the vision consisted in the regeneration of the vesicle. This actually occurred and the eye is now in the same condition as before the accident.

The vesicle acts as a safety valve to prevent the pressure on the sclera becoming too great. My theory, explained elsewhere, that hydrophthalmus is caused by congenital absence of the meridional fibres of the ciliary muscle, which results in the ocular pressure impinging directly on the inelastic sclera instead of that elastic structure. His case shows how in glaucoma it may be possible to delay blindness after it is too late to prevent, or check the condition. It would be necessary to make a corneal section, then to hinder its healing and form a vesicle of the conjunctiva.

I shall try to do this experimentally.

ABSTRACTS FROM ANGLO-AMERICAN OPHTHAL. MIC LITERATURE.

RV

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Corneal Temperature and Nictitation in Corneal Therapeutics.

McGillivray, A., (The Ophthalmoscope, July 1, 1905), in a recent article concerning the importance of corneal temperature and nictitation in corneal therapeutics, prefaces his remarks by reference to the investigations of Michel and Silex on temperature-topography which is worthy of quotation. Using the thermo-electric couple in his experiments, Michel found the average temperature of the anterior chamber to be 31.9° C., and the middle of the vitreous and lens 36.1° C., with a fall in temperature as the needle was carried from the middle of the anterior chamber towards the cornea, and a rise when it was brought near the anterior surface of the iris. Closure of the lids caused an increase of 2° C. to 3° C. in the anterior chamber, and the application of an ice-bag a fall of from 13° C. to 15° C.

Silex repeated and extended Michel's experiments on various

animals, including man, using thermo-electric couples made of copper and iron, connected with a Thompson's galvanometer. and allowing for other currents, occurring with closure and constant temperature in his calculations. In the dog's eye, he found the following temperatures: Anterior lamellae of the cornea, 29.58°; anterior chamber, 34.49°; anterior surface of the iris, 36.77°; in the lens, 36.55°; in the vitreous, 36.06, and in the optic foramen, 39.3°, the rectal temperature being 40° C. In the rabbit, rectal temperature, 38.6° C.; conjunctival sac. 35.4°; anterior chamber, 32.1°; lens, 35.46; and center of the vitreous, 33.5°. Taking all circumstances into consideration. Silex thinks we are justified in saving that the conjunctival sac has a temperature of 2° C., corneal lamellae 10° C., anterior chamber 6° C., lens 3° C., iris substance 0.36 C., and center of the vitreous 4° C., less than the rectal or body temperature. In all inflammatory affections he found that the temperature was elevated as compared with the healthy eye: in hypopyon keratitis as high as 1.45° C., and in acute iritis 1.56° C.

McGillivray's discussion concerns the corneal temperature. which normally is 10° C, or 18° F, below the ordinary body temperature, and its effect on the functional activity of pyogenic micro-organisms. The temperature in which pus-producing micro-organisms grow best and in which their functional activity is at its highest is called the optimum temperature and is, as a rule, the body temperature. Any marked variiation in temperature such as we find in the normal cornea has a retarding or antiseptic effect on invading micro-organisms. Prolonged closure of the lids as in photophobia and blepharospasm from exposure of the epithelial plexus of nerves, such as we find in superficial ulcerations and abrasions, raises the corneal temperature practically to body temperature, thus impairing the natural inhibiting power enjoyed by the cornea during health. This in part explains the disastrous results to the cornea, not infrequently encountered after simple abrasions. In deep or perforating lesions of the cornea, the epithelial plexus being destroyed, little or no photophobia is found, so that the corneal temperature thus remains normal and nictitation goes on practically unimpaired. The observer says, it may be taken as a surgical axiom that so long as there is pain, or photophobia in the case of the cornea, there is no healing, or reparative process going on. The treatment then for all corneal lesions, such as abrasions and ulcerations, should we venture to say, consists of means to allay pain and photophobia, so as to enable the patient to open the eyelids freely, and thus restore normal temperature and nictitation; in short the open method of treatment should invariably be adopted, except in case where

the wound is so extensive that closure of the eyelids and a dressing become imperative for the purpose of securing complete apposition of the lips of the wound.

In order to overcome photophobia in corneal lesions, he advises the application of pure cocain in oily vehicles and states that when so used it does not produce desiccation of the corneal epithelium. By removng photophobia in corneal ulcers and abrasions, he states, we restore: 1, normal corneal temperature; 2, normal nictitation; 3, normal lacrimation. In cases of phlyctenular keratitis, in which corneal abrasions of the kind herein referred to are well exemplified, this writer advocates the use of the following:

R		
	Hydrarg. oxid. flav	gr. ii,
	Atropinae (purae)	gr. i.
	Cocainae (purae)	gr. iii.
	Lanolin	dr ii

M. S.—To be applied at least three times a day, a piece the size of a pea being inserted by means of a fine glass rod between the lower lid and the eyeball.

A large double shade of brown paper, sufficiently large to cover the whole face, is worn in order to counteract the effect of the mydriatic, and the patient is encouraged to be in the open air as much as possible during the day and to sleep with open windows at night. If the ointment be properly applied the results are most gratifying, for the photophobia soon disappears and healing sets in almost invariably without delay. Regarding the use of heat and cold in corneal conditions he summarizes his opinions thus: In recent traumatic wounds of the cornea, where closure of the eyelids is necessary for the purpose of procuring complete or more accurate apposition of the lips of the wound, iced compresses continuously applied produce the best results, but where suppuration or a marked inflammatory process has already set in, hot fomentations are preferable. SHB

The Value of the Recognition of Errors of Refraction in Functional Diseases of the Nervous System.

FISHER, EDWARD D., New York, (New York Medical Journal and Philadelphia Medical Journal, July 22, 1905), says regarding epilepsy: "While it has always been my custom to remove any abnormal conditions of the eyes, just as I correct any intestinal, nasal, or uterine diseased condition, in order to place the patient in the most favorable position to respond to special treatment for

the disease itself, I have never found, in one case more than another, that it had any special influence, such as we could trace directly to it, in effecting a cure. Chronic chorea I have never seen in any way affected by correction of errors of refraction. A number of years ago, this subject was rather exhaustively taken up by the New York Neurological Society, and cases of a chronic nature of both epilepsy and chorea were placed under treatment, the bromid when possible being exhibited. After many weeks' and months' trial, the results were negative."

As to melancholia he says: "I cannot observe any direct relation in cases which have recovered to treatment for any special organic disease either of the eye, stomach, uterus, or other organ. All this should be done on general principles, but we should not deceive ourselves into believing that the organic disease has acted either as a causative agent of the disease or as a pathological entity in its continuance. Still further removed from the possibility of its slightest bearing on the disease, can we conceive of evestrain as influential.

General Paresis is a disease with a known pathological history, inflammatory in character, affecting the meninges and cortex with disturbance of the vascular supply; and yet cases are recorded of cure of this disease by correction of errors of refraction. It is indeed important to emphasize the futility of such claims, tending as they do, to interfere with the early treatment of one of the most serious mental diseases with which we have to deal and whose only hope of benefit lies in the very earliest attention and care possible."

M. L. F.

Removal of the Lens in Myopia.

BARNES, JUSTIN I.., New York, (Medical Record, June 17, 1905), reports a bilateral case of removal of the lens with a resulting vision two and one-third times more than before the operations. He gives a very complete bibliography and draws these conclusions: That the contraindications are a known hemorrhagic tendency, chorioidal degeneration and lesions in the macular region, loss of one eye, advanced age, and ability to see well with correction. The justifications are when vision cannot be improved with glasses, when there are no serious fundus lesions, when the myopia amounts to 15 D, or more, and when there is evidence that the myopia is increasing. The methods described are direct linear extraction, direct linear extraction after the methods in patients over fifty, repeated discissions, and the Fukala operation (discission and linear extraction). The advantages are visual, muscular and

antipathological. The dangers are hemorrhage and loss of vitreous, detachment of the retina, incarceration of the iris or capsule, glaucoma, iritis and infection. The optical and visual effects are alteration of refraction, loss of accommodation, improvement in vision, changes in muscular action, prevention of the increase of myopia, and arrest of chorioidal lesions. The results (immediate) are pronounced reduction of the myopia, marked improvement in vision, accommodation is abolished, convergence is relieved, enlargement of retinal images; (remote) continued improvement in vision, cultivation of aphakial accommodation, restoration of binocular single vision and general passivity of the visual act which is no longer dynamic. He concludes that the operation is of great value and destined to play a very important part in ophthalmic surgery.

M. L. F.

Accessory Apparatus for Locating Foreign Bodies in the Eye and Orbit.

DIXON (Archives of Ophthalmology, May, 1905), has designed a marker or indicator to be used in skiagraphy for the purpose of locating foreign bodies in the eye or orbit. The description he gives is as follows. An old laryngoscope was selected, the ball was cut from the mirror, and a brass rod was soldered to the cut surface. A small ball with a set screw was made to accurately fit this rod, and to the sliding ball at right angles to its forearm was soldered a thin copper wire of convenient length, and a drop of soft solder was made to adhere to its free end. The indicator now being complete, it only remained to attach the large ball to the headband by means of the socket, turn it up out of the way, adjust the band to the head of the patient with the rod in proper relation to the injured eve, place the small ball on the pole or rod in proper position, tighten the set screws sufficiently to prevent accident while manipulating the indicator, adjust it accurately to the center of the cornea, measure the distance anteriorly and record it. The indicator should not be allowed to touch the M. L. F. cornea.

Two Cases of Anomalies of the Vascular System of the Optic Papilla.

KIPP (Archives of Ophthalmology, May, 1905) found both of his two cases in the same boy, 15 years old, who had 5/5 vision in each eye. In the right eye one of the branches of the inferior retinal artery protruded into the vitreous for 2 mm., then turned backward forming a sharp loop, coiled itself

around the protruding branch four times and just before it reached the level of the disc it curved to the nasal side over the lower inner quadrant of the disc, entered the retina and then pursued the usual course of the inferior nasal branch. In the left eye the central retinal artery was absent from the disc and all the arterial branches appeared at its periphery. The upper retinal veins entered the disc at its upper periphery, while the lower ones united to form a large and a small branch which continued over the disc to about its middle and then entered the nerve.

M. L. F.

A Contribution to the Pathological Anatomy of Glaucoma.

DOLGANOFF (Archives of Ophthalmology, May, 1905) reports the case of a boy 11 years old who was operated on twice at an interval of about six weeks for soft cataract of uncertain origin. A slight postoperative irritation passed away in a few days each time. The result was unsatisfactory as the vision was not improved though portions of the fundus could be seen. Projection remained perfect and the tension normal. A little more than a month after the second operation a vellowish growth was detached behind the ciliary body and was taken to be a glioma or pseudo-sarcoma. The tension was plus. During the following month the tumor grew rapidly until it reached the center of the pupil. The tension was then plus ? and the eve was enucleated. The retina was totally detached. separated from the chorioid by a vellowish fluid. The chorioid was covered with a vellowish green exudate. The anterior chamber was deep and contained blood at its lower angle. The peripheral third of the iris was adherent to the cornea, but the free central portion was pressed backward, together with the secondary cataract and the enlarged ciliary processes. cataract was adherent to the retina, which was totally detached from the chorioid and extended forward from the optic nerve in the form of a thick, folded cord. The microscopic examination reveals unimportant changes in the sclera, consisting of infiltration with lymphoid elements in the portion correspnding to the ciliary body and the root of the iris, and of a thickening of the vessel walls at this place. There were no changes in the cornea aside from its agglutination to the iris. In the iris perivasculitis, formation of connective tissue, ectropion iridis, agglutination to the cornea and sclera, and loss of pigment were observed. Closure of Fontana's spaces with cell infiltration and pigmentation, and collection of lymphoid elements about Schlemm's canal were noted. In the ciliary body infiltration, formation of connective tissue, and washing away of pigment. In the ciliary processes great changes of form. loss of pigment, infiltration, and development of connective tissue; deformation and commencing degeneration of the cylindrical epithelia: increased development of connective tissue in and laceration of the ciliary portion of the retina. There were deposits of pigment where the iris and cornea were adherent, in the cicatricial tissue in Fontana's space, and in the membrane of the secondary cataract: congestion and in places infiltration of the chorioid: total detachment of the retina, retinitis proliferans et interstitialis, hemorrhages, cysts, fissuration, disappearance of nerve and epithelial elements, and erosion of the vessels. In the intraocular part of the optic nerve there were perivasculitis and infiltration with lymphoid elements. The author considers the cause of the glaucoma in this case to have been iridocyclitis with anterior peripheral synechiae and localization of the pathological process in Fontana's space and the outlet of the anterior chamber. MI.F

Cyst of the Pars Iridica Retinae, With Report of the Case.

OATMAN (Archives of Ophthalmology, May, 1905), reports the following conditions found in an eye enucleated for absolute glaucoma:

Microscopic examination of the eve revealed the changes characteristic of glaucoma absolutum, including total seclusion of the pupil by posterior annular synechiæ. In addition, a large serous cyst was observed on the posterior surface of the iris. It extended from the pupillary margin to the anterior chamber, forming a partial iris. In order to study the cyst walls, it was necessary to discharge the dense pigment by a process of bleaching. Sections thus treated showed that the cyst resulted from a separation of the two layers of pigmented epithelium which form the retinal tract of the iris. The anterior cyst wall was formed by the highly atrophic iris and lined with the outer layer of these cells, while the posterior wall consisted of the inner layer of cells, resting upon a fibrous membrane which evidently resulted from the organization of old plastic exudates. Some proliferation and swelling of the cells were observed.

The development of these cystoid formations depends upon the peculiar anatomical arrangement of the parts. The two layers of pigmented epithelium which form the pars iridica retinæ are of embryological interest, inasmuch as they represent the anterior limit or edge of the secondary optic cup. In the fully developed eye, the outer layer consists of a single row of irregular, ill-defined, spindle-shaped elements inseparably united to the posterior surface of the iris tissue. The

inner layer is made up of well-defined columnar or polygonal cells, with spherical nuclei. These layers, which retain their embryological identity, are easily separated from each other, as is observed in cases of ruptured posterior synechiæ in which cells from the inner layer remain attached to the lens, since the pathological union is firmer than the physiological.

It is probable that a combination of factors is necessary to produce a cyst in the retinal epithelium of the iris. The shrinking of organized plastic exudates may separate the inner from the outer layer, particularly if the iris is sclerosed and rigid. Obstruction is promoted also by adhesion of the periphery of the iris to the cornea. Another possible factor is a vitiated aqueous humor. This is illustrated in severe cases of diabetes, in which iridectomy may be followed by swelling, softening, and proliferation of the pigmented epithelium of the iris, and also by the formation of large cysts. This condition is attributed to the presence of sugar in the aqueous. It occasionally occurs in degenerated eyes aside from diabetes. This indicates that any profound alteration in the composition of the aqueous may affect the cells of the pars iridica retinæ.

Although these formations are called cysts, their analogy to detachment of the retinæ is very evident. In fact, they are detachments of the pars iridica retinæ. The term "cyst," however, is a very convenient one to employ for clinical purposes.

M. L. F.

Amaurosis From Filix Mas.

STUELP (Archives of Ophthalmology, May, 1905), reports the following case: A man 34 years of age, in fairly good health, had been treated on two previous occasions for ankylostomiasis with filix mas without obtaining any definite result. On this occasion he was given 0.3 gm, of calomel in the evening and 4 gm. of the ethereal extract of filix mas on the following morning. As this produced no result, he was given two days later 8 gm. of the same extract. Eleven hours after the second dose he became unconscious. Eight hours later. while wandering about the room in a state of excitement, the nurse thought him totally blind. The state of excitement was followed by one of coma which lasted several hours and then slowly passed away. The eyes were examined 28 hours after the ingestion of the drug and 12 hours after the probable onset of the blindness. Both pupils were dilated almost to the maximum and fixed. The fundus of each eye was white with edema, in which only parts of the retinal vessels could be

seen here and there. Neither optic disc nor macula could be seen. In the right eye the visible portions of the arteries were threadlike and the blood columns broken. The visible portions of the veins were very tortuous and filled with very broad. dark red blood-columns. In the left eye the edema was less and the arterial blood-columns were not broken, otherwise the condition was the same as in the right. Some hours later the retinal edema had somewhat diminished and the arterial blood-columns in the right eve had become unbroken. During the following days the edema gradually subsided, the optic discs came indistinctly into view and hemorrhages became visible. A month later both pupils were moderately dilated and did not react to light or convergence. The optic discs were white with indistinct margins, the retinæ were sprinkled with white to their peripheries, the foveæ could be seen as triangular gravish red spots with indistinct margins, the arteries were visible only here and there as vellowish, white cords, the veins were much diminished in size and sheathed in white and there were numerous hemorrhages in the fundus. Each eye was absolutely blind. M. L. F.

The Transplantation Method for the Treatment of Trichlasis, and New Instruments for the Operation.

BRIGANTI (Archives of Ophthalmology, May, 1905), advocates a modification of the so-called Italian method, or Scimemi's operation. For this operation he has advised a pair of forceps to take the place of Jaeger's lid-holder to seize and hold the lid while the marginal incision is being made. He has also devised a flap forceps to serve as a guide in marking out the flap. This is made in two patterns, one much resembling Desmarres' entropion forceps. He reports that good success has thus far attended his operations.

M. L. F.

Tubercle of the Chorioid.

CARPENTER, G., and STEPHENSON, S., London (The Ophthalmoscope, August, 1905), give an account of a case of acute miliary tuberculosis occurring in a female child, three years of age, in which the ocular changes were subjected to most careful study. The notes on the ophthalmoscopic examination were as follows: Neither of the papillæ is well defined; retinal veins are large and somewhat tortuous; retinal arteries are relatively small and inconspicuous. Each fundus oculi contains numerous fawn-colored tubercles ranging in size from those that are almost equal to the optic disc in diameter, to others having a diameter about equal to one-quarter of the

disc. They are round or oval in shape, and are discretly arranged almost exclusively in the neighborhood of the optic disc and yellow spot—that is to say, in the so-called "central region" of the fundus. The yellow spot region itself is not invaded. Several of the tubercles are crossed by the retinal vessels which manifest no local changes. The number of individual tubercles in each eye was computed as 12. Close examination by the direct method showed that the fawn-colored surface of individual tubercles was stippled with fine retinal pigment which, for that matter, was present over the unaffected parts of the fundus.

The child died 33 days after the beginning of the illness in a comatose condition. The post-mortem examination, made 20 hours after death, revealed typical acute miliary tuberculosis, affecting especially the lungs, spleen and chorioid. Microscopic examination of the eyes showed slight optic neuritis and the lesions characteristic of acute disseminated miliary tuberculosis, namely, local accumulations of small round cells. with a few giant-cells of the Langenhaus type, situated in the thickness of the chorioid and free from pigment. Some of the chorioidal tubercles showed more or less central areas of caseation, as evidenced by the absence of defined elements and the imperfect or peculiar reaction to such stains as hemotoxylon, eosin, acid fuchsin, and picric acid. Some of the chorioidal tubercles showed vertical or transverse sections of chorioidal vessels which had undergone endarteritis. were two pathological curiosities about the specimens. In the first place, there appeared to be in places a general infiltration of the chorioid with small round inflammatory cells; and, secondly, a few outlying areas of tubercle of the retina were found. These were well shown in the accompanying plates. The anterior parts of the eye, including the iris and the ciliary body. manifested no tuberculous deposits.

These observers believe that tuberculosis of the chorioid is by no means uncommon, and that by far the most trustworthy sign of acute miliary tuberculosis is furnished by the discovery of tubercles in the chorioid coat of the eye. They also remark that, as a rule, the characteristic lesion is generally small, single and limited to one eye. The case just related is therefore exceptional, since the chorioidal depoits are present in both eyes, are multiple, and, broadly speaking, are of unusually large size. The pathological invasion of the retina is, in their experience, most uncommon.

S. H. B.

Purulent Inflammation During Fetal Life as the Cause of Microphthalmos and Anophthalmos.

HOPPE (Archives of Ophthalmology, May, 1905). concludes that while it is conceivable that congenital microphthalmos and anophthalmos may be the result of purulent inflammation of the eye during fetal life, such a cause has not yet been demonstrated clinically and is at any rate very rare. The traces of old inflammation met with in congenitally microphthalmic eyes are not, as a rule, connected with the cause of the malformation. The conjunctival discharge, which is often seen at or soon after birth, is also of no etiological importance. It arises from the action of irritations of a mechanical, mechanicochemical, or bacteriological nature upon the conjunctiva during fetal life or at birth. In the latter case we have to deal with an infection in the typical manner.

M. L. F.

Congenital Blindness.

Thomas, C. J., London. (The Ophthalmoscope, August 1. 1905), contributes the records of eight cases of this interesting condition to the literature of the subject. In referring to the prognosis, he states that in the less serious or partial cases where the child is otherwise intelligent, other centers may be brought in to help, and, finally, the child may pass muster, not being a fluent reader or writer, but able to get along. In the more serious cases, if of fair social standing and good general intelligence still much may be done by developing their memory centers; but if of dull intelligence or of poor parentage, it is scarcely likely that any progress will be made with reading, and the time expended in that direction would be better used in manual training.

Thomas' suggestions as to treatment may be quoted in their entirety:

"The child should be placed in a special class in which he can obtain much individual attention from a teacher who is made aware of the nature of the defect. The initial difficulty in learning letters is chiefly due to the fact that the 26 signs are too great a number to be learned and retained unless put to use in word building. The visual recognition of Arabic numerals, as Hinshelwood pointed out, is readiy acquired, even without special instruction in most of the cases. It is probable that the earliest memory of letters is a muscular one; children continually confuse letters which have the same form but differ only in position, so that similar muscular actions are necessary in tracing them out; thus, p, b, d and q are continually mistaken even by normal children; also m and w and n and u. Letters should

therefore be taught from large signs, children should be encouraged early to print them, and it would be very useful if every kindergarten class had a supply of large letters carved in wood which the children could handle and nurse. The most successful methods of teaching reading are those in which as soon as two or three letters are learnt they are used in the building of words, but for the word-blind this is impossible in the ordinary way. It is owing to the power the normal individual has of storing in his visual word center the "ideographs" of words that the English language has ceased to be phonetic; words are seen and recognized as wholes and not as composed of letters, so that to a normal reader each word in his visual vocabulary has a single sign. It is probable that it is because most other European languages remain largely phonetic that the condition has not attracted much attention abroad.

"There is one method of teaching to read English which ignores in the early stages, at any rate, the visual word images. This is the phonic method. Miss Dale, of the High School, Wimbledon, has elaborated this method to great perfection, and word-blind children should be started upon her plan. In this the children associate from the beginning the form of each letter with the mechanism for producing the most usual sound for which it stands: thus each word is pronounced without calling upon the visual word center at all, and the meaning of the word is arrived at, via a motor speed plus auditory memory. Miss Dale has an elaborate series of reading books in which only regular phonetic words are met with until the child is considerably advanced. A wordblind child should commence learning to read on this plan, and should progress fairly readily up to the time at which irregular words are introduced and ideographs become necessary.

"At this stage other memories must be invoked and a little careful study of each child will show in which direction help is to be sought. When the particular memory is found it must be encouraged to the utmost; it will often prove to be a kinæsthetic memory. One child, by rapidly spelling the letters with the lips, will arrive at the meaning of the word, another will trace the letters in the air or on the book with the fingers, and thus arrive at the meaning.

S. H. B."

Ocular Injury Due to Potassium Permanganate.

Powerle, H. F., (The Ophthalmoscope, July, 1905), gives an account of two instances in which contact of permanganate of potassium crystals with the eye induced violent reaction of all the tissues. Both patients were children. Swelling and redness of the parts were marked and blackened areas were ob-

served. Prompt treatment by means of boric acid lotion and castor oil prevented more serious results. The rarity of the circumstance is worthy of reference.

S. H. B.

Congenital Bilateral and Symmetrical Dislocation of the Crystalline Lenses.

HARMAN, N. B., (The Ophthalmoscope, July, 1905), gives an account of a case of this character occurring in a poorly nourished lad, 14 years of age. He was first seen eight months prior to the making of this report and it was at once noticed that both lenses were dislocated. There were no other abnormalities. In cases of this character, where operative treatment is indicated, Harman thinks the better procedure is to open the anterior chamber and boldly to remove the capsule of the lens by seizing it with Couper's capsule forceps, steadying the lens if necessary with a needle.

S. H. B.

Radium as an Analgesic.

Darier, A., Paris (The Ophthalmoscope, July, 1905), in the concluding section of his recent summary of the new conquests of ocular therapeutics, relates the history of several cases of pain in the head relieved by exposure to radium. The substance was especially valuable in relieving the pain of rheumatic iritis in one case, and in another case of orbital neuralgia complicating specific chorioiditis it was equally valuable. Darier also refers to the other instances of head pain, neuralgia, migraine, etc., which were treated with extremely gratifying results. The cure of a case of trachoma by radium is also included in this summary. [The criticism that must arise in connection with radium is—does it not do too much?]

S. H. B.

Analgesic Action of Radium and of the Radio-Active Substances.

DARIER, A., Paris (The Ophthalmoscope, June, 1905), in an original contribution on the new conquests of ocular therapeutics, considers radium and allied substances in relation to ophthalmology. He states that when we make a resume of the effects produced by radium upon living creatures, under very high tensions, 100,000 U. minimum, we observe a destructive caustic, local action, the effects of which are longer in making their appearance, in inverse proportion to the length of time to which the patient has been exposed to its influence, and also when the patient has reached a state of full development. In the same manner the effects of radium are retarded by a less direct application, and are modified according to the

nature of the envelope which is used, which may be less transparent, and more difficult to penetrate, such as lead, glass, celluloid, etc. He refers to the various literature on this subject to show that radium is an active therapeutic agent in the removal of certain tumors of the skin, and also that it possesses analgesic properties. He also refers to his own observations in which ocular neuralgia and certain headaches were relieved by exposures to its rays. In neurotic, convulsive epilepsy, and neurasthenia he also found it of value in relieving pain. He was also able to resorb intra-ocular hemorrhage in two cases by applications of radium-active substances to the eyeball and at the temple. [We are unable to find any record in the past year of anything like such marvelous results and despite the statements of so great an authority as Dr. Darier, we are naturally sceptic about these substances.]

Early Detachment of the Retina in Cases of Sarcoma of the

Parsons, J. H., (Ophthalmic Review, June, 1905), after an examination anatomically of fifty cases of sarcoma of the chorioid and ciliary body, reaches the following conclusions: 1. That detachment of the retina occurs earlier in sarcoma of the chorioid than would be gathered from the ordinary textbook description. 2. That, apart from the elevation at the site of the growth, there is no true detachment in the early stage; the detachment manifests itself invariably as a shallow. simple detachment over the lower hemisphere. 3. That this detachment is frequently entirely isolated from the tumor, the intervening retina being in normal apposition to the chorioid. 4. That this is invariably the case when the tumor is in the upper hemisphere; when the detachment is continuous with the elevation at the site of the tumor it is, in the early stages, merely due to the accident of the position of the growth, i. e., near on in the lower hemisphere. 5. That this isolated detachment is simply the first stage of the total detachment which usually supervenes. S. H. B.

Ocuiar Symptoms of Accessory Sinus Affections.

Posey, William Campbell, Philadelphia, (Journal of the American Medical Association, Sept. 9, 1905), While the average member of the profession is conversant with the general symptomatology of sinus disease, there are yet many of the less striking symptoms with which they are less familiar. Many of these are among the earliest ones and are attributed to evestrain and refraction advised. In some cases the use

of atropin employed to put the ciliary muscles at rest dries up the secretion and actually effects a cure. This, however, does not always happen, and much damage and loss of time may follow the error. Among the less frequent symptoms he includes implication of the optic perve and disturbances of vision. The condition, he states, is to be studied by the usual methods with the ophthalmoscope, test cards, perimeter, etc. Orbital disease is usually secondary to sinus disease, and one of the earliest signs is a change in the contour of the orbital ring. The particular sinus involved can not always be made out, but the character of the orbital displacement is often significant. Optic nerve involvement, circulatory disorders of the orbit and conjunctiva, etc., may also be of diagnostic value, but the symptoms may be obscured by the anatomic variations of the sinuses. which are not infrequent. Sinusitis is only rarely a direct cause of lacrimal disease, though it may more frequently produce it indirectly by way of the nasal mucosa. Edema of the lids is one of the most significant signs of accessory sinus disease, and may often first call attention to its existence. It is non-inflammatory, is usually most marked on the upper lid, and in the morning, disappearing during the day. A persistent blepharitis may accompany the chronic conjunctivitis of sinus disease, and may disappear only with the removal of its cause. The close anatomic association of eve muscles and nerves accounts for the ocurrence of ocular paresis or paralysis from sinus disease. Paresis, indeed, may occur in very mild cases, and Posey is of the opinion that if many of the cases of palsy of extraocular muscles attributed to rheumatism were analyzed an affection of a sinus would be found to be the underlying cause in many Conjunctivitis may be the result of the general mucous congestion, and occasionally there may be an implication of the cornea, either directly from the exposure incident to the exophthalmus, etc., or by implication of the fifth nerve. Pupillary changes may accompany the optic neuritis when it exists. Posey considers that intraocular affections, uveitis. etc., must be very rare, though some authorities hold that they are frequent. Refraction disorders and asthenopia occur from the pressure on the orbit and inflammatory interference with the musculature, etc. Headache and neuralgia are pretty constant attendants of sinusitis, and while not always characteristic, are often decidedly so. The special features are given in detail. Other symptoms of a general character, fever, evidences of cerebral congestion and irritation, neurasthenia, gastric disturbances, and even marked mental symptoms may also be induced. Cerebral symptoms indicating involvement of the meninges or sometimes even brain abcess may occur.

An Advancement Suture

STEVENSON, M. D., Akron, Ohio (Journal A. M. A., Sept. 9), believes an advancement, alone or combined with tenotomy, is practically always to be preferred to a tenotomy alone. If the defect is slight, the advancement may be all that is required, but very frequently he thinks it advisable to perform partial or complete tenotomy of the opposing muscle thus avoiding the extra strain on the sutures and favoring a permanent good result. He is very careful in his preliminaries. examining the field of rotation with Stevens' tropometer to determine the relative strength of the muscles, carefully preparing his suture material and sharpening his needles, examining them with a powerful glass before using and adequately sterilizing everything. His advancement operation is a modified Worth's the only essental difference being in the suturing, which is described by him as follows: "One of two sharp needles on a prepared suture is passed from without inward through the conjunctiva, capsule and junction of the upper and middle thirds of the tendon muscle. The same needle is then passed outward through the upper margin of the tendon muscle through the capsule and conjunctiva, then back through all three just behind the first point of entrance, forming a complete loop. It is then carried subconjunctivally almost to the edge of the cornea and stitched deeply through the episcleral tissue into the sclera. The needle on the other end of the surture is similarly used, making a loop on the lower portion of the tendon, capsule and conjunctiva, and also making an episcleral and scleral anchorage near the cornea and close to the outer suture, then the two sutures are tied in the first part of a surgeon's knot. Sometimes it is sufficient to pass only one neelde through the episcleral and scleral tissue, tying the sutures as before. All superfluous tissue should be removed only sufficient being left to hold the sutures and to close the gap when the sutures are tied. If thought advisable, the proper degree of tenotomy is then performed on the opposing muscle of the same eve. The patient is then requested to look steadily at some small distant object, and the hand is passed alternately before each eye, while the suture is tightened until the eyes cease to move, when the desired rotative effect is secured and the knot is completed. Under general anesthesia only an approximate correction can be expected. In such cases it is often preferable to tie the suture under local anesthesia after the patient has recovered consciousness and the cover test can be used. It is never necessary to suture the conjunctiva on the side of the advancement, but it is sometimes best to do so over the tenotomized muscle." He considers this suture is easier and simpler, is more quickly done and more secure than others, and only one knot is needed, whereas four are required in Worth's operation. The larger part of the paper is taken up with questions submitted to other ophthalmologists and an analysis of their replies in regard to strabismus operations.

Obstetric Injuries of the Cornea.

THOMSON, E., and BUCHANAN, L., Glasgow, (The Obhthalmoscope. June, 1905), record an account of a considerable number of cases of obstetric injury to the eve of the new-born child. In a larger proportion of these, the cornea has been involved in a peculiar manner which appears to be rare in localities other than Glasgow. They suggest that this localization is dependent on the frequency of rickets, with marked pelvic deformity and consequent necessity for forced delivery. They also refer to the six cases previously reported by them and give the histories of nine additional cases of corneal injury. Corneal traumatism is a rare complication of assisted labor. even when only difficult deliveries are considered. It results from pressure during a prolonged second stage, which pressure is due either to some form of obstruction in the maternal passages, to compression by forceps or to both factors combined. Instances are cited showing how this may occur. The clinical distinctions of the corneal changes, as made by these authors in their previous paper are also given. These changes consisted of, (a) A diffuse temporary opacity; (b) A diffuse permanent opacity, indeterminate in position; a permanent opacity which takes a linear form. On further observation, they have concluded that there are but two principal changes, namely, 1. A diffuse temporary opacity; 2. A permanent opacity which takes a linear form and passes vertically, obliquely, or horizontally across the whole, or a part of the cornea, in a straight or curved manner or concentrically with the limbus. In most cases there is more than one linear opacity. The first form occurs with comparative frequency and is undoubtedly due to edema. It may occur alone or in conjunction with the second form. The second form is due to rupture of the posterior elastic lamina of the cornea and the subsequent formation of fibrous tissue. It is usually associated during the first days or weeks after birth with a general corneal edema (first form) which may cause a uniform opacity sufficiently marked to mask the appearances due to rupture of the elastic lamina. This communication contains the complete detailed histories of the new cases of this condition observed by these writers and a chart showing the variations in position and direction of the linear

opacities. They infer that these opacities become indistinct in the course of years and that they will be found to account for a certain proportion of cases of corneal astigmatism (especially monocular) of high degree.

S. H. B.

Orbital Sarcoma with Report of a Case and a Discussion of Radical Operation, X-Ray Therapy, and Electro-Sterilization.

- RING, G. ORAM, Philadelphia, (New York Medical Journal and Philadelphia Medical Journal, June 10, 1905), reports a case in which he exenterated the orbit of a child 6 years old to remove a round-cell, non-pigmented sarcoma which had invaded the connective tissue of the orbit. After a consideration of the different methods of treatment he comes to the following conclusions:
- 1. The difficulty in accurate diagnosis under certain conditions entirely justifies an exploratory incision with removal of a section of growth for microscopic study, said exploration likewise serving to determine the ramification of the tumor.
- 2. The brilliant results achieved by a number of accurate observers in the field of Roentgen ray therapy justify the immediate tentative application of the method before any radical operation is attempted. If unsuccessful in removal of the growth the virulence of the latter will probably be decreased and the dangers of metastasis lessened. (Leonard.)
- 3. If the sarcoma is encapsulated, operative intervention without orbital evisceration promises a successful outcome.
- 4. In view of the almost constant recurrences after orbital evisceration, the removal of the growth itself is regarded as sufficient unless the periosteum or bony wall is involved.
- 5. The encouraging results reported from the cataphoric sterilization of malignant growths in other parts of the body seem to warrant the utilization of this method in the orbit, due care being exercised as to strength of current used. (Massey.)
- 6. Future experience must determine whether better results will be achieved by using this method for the original growth, or reserving it for recurrence in loco.
- 7. If operation has been performed and the growth has recurred, we have at command these two valuable methods of attack.

 M. L. F.

Fibrillary Edema of the Retina Following Contusion.

FRIDENBERG, PERCY, New York, (Archives of Ophthal-mology, July, 1905), reports a case in which a man was struck on the right eye with a sandbag about 36 hours before coming

under observation. The lids were bruis conjunctiva injected, the cornea smoky, pupil oval, the iris sluggish with some smallary margin and trembling of its lower see was moved suddenly. He describes the first

"The retina in the neighborhood of the edematous, the normal stippling being ind intensely but evenly red, with a bright ve at its center. Surrounding it there appear what higher but little wider than the no of a silvery white glistening hue, and crinkly contour. Slight changes in the caused this whitish reflex to shift about the one point to another of the ring. opacity, a large number of fine milky whit which can be followed for about 21/3 These spaces are separated by spaces of 1 retina. They appear to be in the nerve fib: the level of the smallest vessels. The lat there, perivascular whitish reflexes, sugg: appearance. This is more marked in the vebelow the macula from above and below, v and hence somewhat coarser in outline to point below and to the temporal side of the small triangular area of milky edema. The peared when the patient was seen again to examination with the electric ophthalmose: the fine vessels above and below the macula marked, brilliant and extensive. A plexu occasionally intertwining silvery lines runs is somewhat congested, but not blurred in macula. This is surrounded by the above sunburst of milky striæ. Change in the ar mination causes the light to flash along other, previously invisible, crisp, silvery wh just below the plane of the large vessels. of changing, darting, light reflexes suggest alis." The vision of the injured eve was when the patient was last seen it was 20/ partial objective central scotoma for white

Total Congenital Detachment of the Retina

FERNANDEZ, JUAN SANTOS, Havana, (Ophthalmology, July, 1905), reports two tachment of the retina present from birth in

considers them unique as he has been unable to find any record of similar cases.

M. L. F.

Recurrent Paralysis of Ocular Muscles Associated With Pain.

Stirling, Alex. W., Atlanta, (Archives of Ophthalmology, July, 1905), reports a case of this nature, a rather rare condition as only about 40 cases are on record. Seven years intervened between his first and second attacks of pain; after that the intervals varied from 14 to 30 days, each attack lasting four or five days. The first onset of paralysis was in 1889, from which he recovered in 2 months, the second a year later, recovery in 3 months, the next a year later, continued for 6 months and the last attack was recovered from in 3 months. But the recovery was imperfect as the pupil has never become as small as the other one since the first attack, and the ciliary muscle has remained more or less paralysed since the second. The pain, which is very sharp and continuous, appeared 24 to 36 hours before the paresis. Stirling believes the trouble was due to a toxemia caused by trouble in the digestive apparatus.

M. L. F.

Embolism of the Central Artery of the Retina with Retention of Normal Vision.

HAY, P. J., (The Ophthalmoscope, June, 1905), gives the history of a case of embolism of the central artery of the retina attended by the very unusual phenomenon of retention of normal vision. The patient was an unmarried woman, 43 years of age, who had had typhoid fever, scarlet fever, and rheumatic fever and at the time of this observation had dilation of the left ventricle and valvular disease of both the aortic and mitral valves with symptoms the consequence of impaired circulation. Six years before she had had an attack of blindness in the left eve which passed off without leaving any untoward effects. In 1899, she presented herself with severe supraorbital pain over the left eye which was said to be worse at the menstrual periods but the menstrual functions appeared to be normal. The vision of both eyes was normal. The pupillary reflexes were normal. The right field of vision was full, but the left one was markedly contracted and limited to an area extending from the macula to the disk. Upon ophthalmoscopic examination, the fundus presented a peculiar appearance. The whole of the fundus was edematous with the exception of the papillo-macular region. Around the latter there was a fringe of numerous fairly large hemorrhages. The central artery was contracted. The fundus gradually resumed its normal appearance except that the disk paled a little and the arteries seemed slightly contracted. Vision continued to be 6-6. The supraorbital pain subsided. The retention of good vision was due to the presence of a cilio-retinal artery. The macular region received the whole of its blood-supply from the branches of this vessel and so escaped the effects of obstruction in the central artery. It was noted that the yellow spot occupied a much lower position than is usual. Thus the area toward the disk extends in an upward and inward direction, and the field of vision therefore extended correspondingly downwards and outwards from the point of fixation. Four years later, the patient was the subject of another attack but recovered normal vision.

S. H. B.

Glaucomatous Cioudiness of the Cornea.

SILEX, P., Berlin, (Archives of Ophthalmology, July, 1905), believes that in acute glaucoma the cloudiness of the cornea does not depend on an edema, as has hitherto been supposed to be the case, but upon a stretching of the cornea whereby doubly refracting elements are induced to appear which cause a multiple reflection of light. This theory is based on experiment, clinical observation, and pathological anatomy. A cloudiness of the cornea is produced by injection of fluid into the vitreous which is similar in appearance to that of acute glaucoma.

M. L. F.

Papillo Retinitis From Iodoform Polsoning.

MOHR, MICHAEL, Budapest, (Archives of Ophthalmology, July, 1905), reports two cases in which coxitis and cold abcess has been treated by the injection of a 10 per cent. emulsion of iodoform which induced symptoms of iodoform poisoning associated with papillo-retinitis. In each case all other causes of papillitis were excluded.

M. L. F.

The Influence of Caffein on the Field of Vision In Quinin Ambiyopia

Schwabe, Gustave, Leipsic, (Archives of Ophthalmology, July, 1905), reports a very curious case in which in from 15 to 16 minutes after drinking a fairly strong cup of tea or coffee the field of vision, already much contracted as the result of quinin poisoning, would undergo a further contraction, almost to the point of fixation, and then would return to its previous limits in about the same length of time. No permanent injury to the vision had resulted from the use of coffee at the end of the year.

M. L. F.

Vernal Catarrh.

FALTA, MARCEL. Szeged, Hungary, (Archives of Ophthal-mology, July, 1905), divides vernal catarrh into the following six forms:

First form: The eye shows no change. The ocular and palpebral conjunctive appear perfectly normal. The patient has severe photophobia, and with strong light a little ciliary injection may be seen. This form is not independent. sooner or later it passes over into one of the other forms. is the initial stage of the disease, with which probably all forms begin, but it is usually of so brief a duration that it may not come under observation. It may last a month, however, and the diagnosis is very difficult, especially when the disease appears during infancy and the patient can give no account of the subjective symptoms. This form may readily be confounded with the lymphatic eve diseases. The parents of a 3-year-old boy brought him to me in May, 1899, because he constantly blinked and was afraid of light. The eves were a little cloudy, and a little ciliary injection could be made out. The pale face of the little patient, some swollen lymphatic glands, and the ocular symptoms led to a diagnosis of lymphatic eve disease, a diagnosis which seemed to be confirmed by the fact that the house in which he lived was very damp. Calomel was dusted in the eyes and strengthening diet ordered, but the condition grew neither better nor worse. I then recommended change of air. When I saw him next, two months later. his eyes were red, with much photophobia and marked ciliary injection, while the tarsal conjunctive of the upper lid showed the mosaic-like proliferations of vernal catarrh. The great heat by the Plattensee and the intense light reflected from the surface of the great body of water caused a rapid development of the vernal catarrh, from which the boy continues to suffer.

Second form: In this typical and most frequently observed form we find the well-known degeneration of the tarsal conjunctiva of the upper lid, which presents the appearance of a stone pavement, or mosaic. Goldzieher's term, "shagreened," is expressive. The entire surface is more or less opalescent. The conjunctiva of the lower lid and of the retrotarsal fold is simply catarrhal, or only hypermic. This form is often mistaken for trachoma. A boy, eleven years old, was brought to me at the beginning of the school year, and I found the changes just described on the inner surface of his upper lids. I was sure that at school he would be classed with the trachomatous, and so it proved. He was also advised to

enter the trachoma hospital for treatment.

Third form: About the cornea are brownish-red nodules, which sometimes cross the margin and invade the cornea itself. A network of conjunctival vessels is attached to each nodule. The eye is irritated, more or less photophobic, and frequently hyperemia if the iris with ciliary injection is present. The only other changes present are perhaps a catarrhal condition of the palpebral conjunctiva, with a little mucous secretion. This form is very easily mistaken for phlyctenular keratitis, and its confusion with keratitis fasciculosa is not impossible when the nodules are situated at or near the limbus.

Fourth form: Several flat, broad infiltrations of colloidal consistence in different places in the ocular conjunctiva, with dense vascular networks attached. In one patient suffering with vernal catarrh the infiltration on the right eye was as large as a cent, and was situated 5 mm. from the corneal margin in an upward and outward position. This form may be confounded with episcleritis.

Fifth form: A mixture of the second and third forms.

Sixth form: A mixture of the second and fourth forms.

As to diagnosis he says: "When a patient comes with a complaint of constant itching in the eye, vernal catarrh is probably present, but if he adds that the itching annoys him only in warm weather, the diagnosis is certain." Treatment is palliative, the disease finally disappears spontaneously.

M. L. F.

Suppuration of Cicatrically Degenerated Corneal Tissue and the Conditions Under Which Micro-organisms Pass Through it Into the Interior of the Eye.

DOLGANOFF and SOKOLOFF, (Archives of Ophthalmology, July, 1905), draw the following conclusions from a number of experiments on the eves of rabbits:

- 1. A purulent infection which begins in a corneal cicatrix quickly spreads to the deeper parts of the eye.
- 2. The clinical course of this disease is typical, and its characteristic symptoms seem to be a remarkable disproportion between the insignificant injury with which it is started and its rapidity and violence.
- 3. With very rare exceptions the disease is uninfluenced by treatment and results in the loss of the eye.
- 4. No explanation of its characteristic course can be obtained clinically. The existing theories fail to explain all symptoms and seem to be disputable.
 - 5. The epithelium of the cicatricial cornea, while intact,

serves as a protection against the entrance of infective germs from the conjunctival sac into the deeper tissues.

- 6. Very virulent cultures of streptococci and staphylococci in the conjunctival sac cause only an acute catarrh of the mucous membrane, which rapidly passes away without producing any injury to the eye.
- 7. The introduction of a pure bouillon culture of staphylococci into the superficial layers of a leucoma is productive of a typical corneal ulcer with a precedent abscess.
- 8. The characteristic points of these ulcers appear to be the fixed course, the ring-like arrangement, and the tendency to hypopyon.
 - 9. The virulence of the culture is an important feature.
- 10. The introduction of a pure bouillon culture of streptococci is productive of an infiltration, which quickly changes to an abscess and, on the second day, to an ulcer with hypopyon. No clinical difference exists between a hypopyon caused by streptococci and one due to staphylococci.
- 11. After the inoculation of a culture of either staphylococci or streptococci into both the normal and the cicatricial cornea of the same animal, there is a much more rapid development of symptoms in the eye with cicatricial cornea than in the other.
- 12. The cicatricial cornea also melts away much more rapidly than the normal one under the influence of these cultures.
- 13. After the introduction of cultures of staphylococci into the normal cornea there is to be observed, in addition to a superficial ulceration at the point of inoculation, a ring-shaped ulcer with a characteristic deposit at the periphery of the cornea. Streptococci do not produce a similar ulcer in the normal cornea.
- 14. The ulceration produced by the inoculation of staphylococci and streptococci in the superficial layers of the cornea extends in the leucomatous cornea chiefly into the depths of the scar, while in the normal, after an equal lapse of time, it is confined to the superficial layers without involvement of the deeper.
- 15. The micro-organisms have passed through the corneal cicatrix into the anterior chamber at a time when the ulceration has only just involved the most superficial layers of the leucoma; therefore the destruction of the cicatrix is not necessary for their passage through it, but only a solution of continuity in its epithelial covering.
- 16. Colonies of staphylococci of the virulence used in these experiments have passed through the leucoma into the anterior

chamber at the end of the second day after inoculation.

- 17. Two days after the inoculation of the normal cornea with staphylococci of the same virulence the colonies have not penetrated deeper than its middle layers, and this proves that their movement is restricted in the normal as compared with the cicatricial cornea.
- 18. Colonies of streptococci have passed through the cicatricial cornea into the anterior chamber ten hours after their superficial inoculation.
- 19. In the normal cornea the colonies of streptococci are still limited to the place of inoculation after ten hours.
- 20. A defect in Descemet's membrane, at a point corresponding to the place of inoculation in the superficial layer of the leucoma, appears to be an indispensible condition for the passage of the micro-organisms through the cicatrix into the deeper parts of the eye.
- 21. If the inoculation is made at a point not corresponding to the defect in Decemet's membrane, but at some distance away, the microbes cannot penetrate into the deeper parts of the eveball, even after they have become well developed in the leucomatous tissue, and so a general infection is not brought about.
- 22. This restraint of the micro-organisms appears to be exercised by the ring of infiltration which is formed between the colonies of microbes and the place in the cicatrix which corresponds to the defect in Descemet's membrane.
- 23. A passage of the microbes into the anterior chamber could not be demonstrated when, though the leucomata were extensive. Descemet's membrane was uninjured, but the leucomatous tissue ulcerated much more rapidly than the normal.
- 24. The density of the cicatrix and the absence of a fistula afforded no hindrance to the passage of the micro-organisms.
- 25. The entanglement of the iris in the cicatrix does not influence the general course of the disease.
- 26. The iris plays an important part in the formation of the hypopyon.

 M. L. F.

The Eye and the Digestive System.

STEVENSON, M. D., Akron, O. (American Medicine, vol. VIII, No. 25, December, 1901), says: Dizziness, nausea, vomiting, headache and faintness may be provoked by an improperly fitting pair of spectacles, as well as by abnormal strengths of the eye or its muscles. Stevenson thinks an undue amount of energy is consumed in overcoming the muscular and refrac-

tive errors, so that not only are these symptoms noticed, but other functional digestive disturbances may be due to the inadequate nerve supply to the digestive organs of those subject to these conditions. He considers seasickness to be caused by a reflex disturbance from the eyes and semi-circular canals rather than from the stomach itself. After a too hearty meal such persons may have disturbances of accommodation, diploppia, etc. Blindness sometimes follows after hemorrhages into the stomach and intestines, while yellow vision may accompany jaundice.

B, C.

Encephalitis and Other Nervous Affections Complicating Scarlatina.

RHIEU, J. H. W., Philadelphia (American Medicine, vol. IX, No. 26, page 991, June 17, 1905). In an exhaustive analysis of the nervous affections complicating scarlatina, Rhieu states that in this disease there may occur optic neuritis, with choking of the disc followed by atrophy, with the consequent blindness, due to a meningitis provoked by the scarlatinal poison. Transitory amaurosis may occur when profound uremic symptoms supervene; yet cases of permanent blindness from this cause have been found in the literature upon the subject.

B. C.

Systematic Examination of the Eyes of Defecters.

LEWIS. F. P., Buffalo, (American Medicine, vol. X. page 238, Aug. 4, 1905). Lewis uses the word "defecter" broadly, and includes the dull boy in school, to the low grade idiot in the asylum, and the erratic girl, or eccentric man to the pronounced lunatic. He holds that asymmetric development of the ocular apparatus, and inconformity of the orbital axes and angles, are factors of sufficient importance to disturb the physiologic activities of the apparatus in its relation to the higher nervous centers, and give rise to psychologic defection. He therefore insists that every dull or nervous boy or girl in the schools, every case of incipient pulmonary tuberculosis, every candidate for admission to a state hospital, every child summoned before a juvenile court or sentenced to a reformatory, every reasonably intelligent epileptic, should have a careful examination of the eves and means for relief of eyestrain afforded. For, continued evestrain unfavorably modifies nutritive psychic and mental processes; while cures cannot be expected in organic lesions, yet comfort can be afforded, and in the case of young, impressionable subjects with limited mentality, the effects produced may be astonishing and gratifying.

B. C.

Kuhnt's Conjunctival Flap (Schoelier-Kuhnt's Conjunctival Graft).

SUKER, G. F., Chicago (Ophthalmology, vol. I, No. 4, July, 1905, page 650). Suker ably sets forth the virtues of this operative procedure and recommends it with necessary modification in cases of wounds of the sclera and cornea; corneal fistulæ; sepiginous or perforative ulcers; moderate staphylomata; hernia of the iris; prolapses of the ocular contents; extensive conical cornea; untoward conditions in wounds following cataract extraction and the like; and as a protection for the cornea in similar conditions in gonorrheal ophthalmia.

B. C.

Dionin (Ethyl-Morphia-Hydrochlorate) in Ocular Therapeutics.

CONNOR, L., Detroit (Ophthalmlogy, vol. I, No. 4, July 1905, page 629). This morphin derivative was first used by Wolfberg of Breslau, though it has been enthusiastically exploited by Darier. Connor details the results of his use of it in the most diverse forms of ocular disease and his conclusions as to its value are as follows: While it has powers not possessed by other known substance, its exact place in ocular therapeusis is not yet determined, and until its status has been established it is wise to use it in connection with accepted modes of treatment or after these have failed. No damage has as yet been reported from its use. It promotes the cleansing and repair of damages adjacent to the lymph channels of the deeper tissues of the εyeball. It increases the effects of mydriatics, miotics and local anesthetics, proving helpful in diverse pathologic conditions.

Its limitations are: the short period during which it operates—about three days—when it needs a rest of equal length. In some instances its reaction is slight and the specific benefits small; in others the reaction is startling and the results correspondingly good. It is an analgesic and not a local anesthetic, so is useless for the removal of foreign bodies or in other eye operations.

B. C.

Treatment of Congenital and Infantile Hydrophthalmos.

Schoenemann, Carl (Archives of Ophthalmology, July, 1905), reports seven cases in which he has obtained favorable results from the performance of an iridectomy. Six had been under observation from three to six years after the operation, one for only eleven months. He believes these cases to be amenable to iridectomy performed as early as possible.

M. L. F.

Nitric Acid Burn Involving the Whole External Portion of the Eyeball.

VEASEY, C. A., Philadelphia (Obhthalmology, July, 1905). On examination the patient showed numerous burns on the cheeks, nose, evelids and lips. The whole ocular and palpebral conjunctive of the right eye, with the exception of a small portion about 1/2 cm. in diameter, was badly burned. The whole cornea was steamy, and with a loupe numerous long lines (probably scratches) were distinctly observed. Between these lines the cornea presented a stippled appearance, giving it an opacity so dense that the iris could be very indistinctly seen. Vision equalled only light perception. The eyes were thoroughly cleansed, atropin and petrolatum were instilled and the left eve was lightly bandaged. The patient was placed in bed. and cold compresses were constantly employed. On the third day hot carbolic fomentations were employed in place of the cold: iodoform oil and atropin were instilled at the time of each arrigation with warm nomal salt solution, and the adhesions which had commenced to form were broken daily by the passage of a small probe. One week after the accident had occurred the outer fourth of the cornea was comparatively clear and sensitive; the inner three-fourths were still hazv and anesthetic. The two portions were divided by a well marked, almost vertical line passing through the temporal fourth of the cornea. All the adhesions were now broken and the opaque anesthetic portion of the ocular conjunctiva was covered with epithelial grafts of mucous membrane, taken from the inner surface of the lower lip. The eve was covered with a warm moist dressing, and an inspection at the end of 48 hours showed the grafts in place and apparently healthy. About a week before the sensibility of the cornea returned the patient was given full doses of thyroid extract. The patient. who was greatly debilitated, now went to the Maine woods for a month's outing, and when his eyes were refracted three months after the accident, his vision was 6/2—; the cornea was clear and the conjunctiva was in a healthy condition, which remains after 18 months. The author makes special note of the extensive employment of the epithelial mucous grafts and the use of the thyroid extract. H. G. G.

Some Lesions of High Myopia Clinically Considered.

HANSELL, HOWARD, F., Philadelphia (Ophthalmology, vol. I, No. 4, July, 1905). Hansell believes the causes of progressive myopia to be due to an hereditary tendency to scleral distension; to a congenitally enlarged eyeball; to excessive con-

vergence; compression of the ball between the straight muscles, and imperfectly corrected myopia and astigmatism. He does not believe the ciliary muscle to be a factor in the etiology of the advancement of myopia after the myopia has reached 7 D. or more, even in young individuals. Nevertheless, he believes it to be unquestionably true that accommodation effort will temporarily or permanently increase the refraction of the eye by its direct action on the lens through the suspensory ligament and by the chorioidal congestion invariably induced by its continued action.

The changes usually found in myopic eyes are located in the posterior portion of the ball, resulting from the increasing axial myopia. The symptoms commonly complained of are low vision, a demand for greater illumination and the early exhaustion of the seeing power; these are dependent upon a thinning of the chorioid and the stretching of the retina in the neighborhood of the fovea.

In the treatment of progressive myopia the question to be decided is "how can the deterioration of vision be prevented?"

The principal treatment consists in the avoidance of near work and the excessive convergence, and the correction by lenses of the myopic and associated astigmatism. In Hansell's opinion the young myope should wear as near full correction as practicable for distance and never for near.

B. C.

Microphthalmus, Persistent Pupillary Membrane, Anterior Synechia, and Central Congenital Opacity of the Cornea.

STIRLING, J. W., Montreal (Ophthalmology, vol. I, No. 4, July 1905). This communication refers to the case of a man of 26, whose left eve was but 24 mm. in the horizontal diameter: the cornea measured 10 mm. in the vertical and 11 mm. in the horizontal meridians. The eye deviated upwards and inwards. A dense gray opacity occupied the center of the cornea and extended to about 2 mm. within the limbus; beyoud the opacity the membrane was sufficiently clear to allow a view of the fundus. The opacity, which was limited to the posterior layer, was not uniformly dense, but appeared to be reticulated or meshed; the edges were not sharply cut, but more or less serrated. Extending from these serrations, to be attached to the iris at the pupillary circle, were a number of strands of grayish tissue. The pupil was active and the lens clear. The iris was atropic and deeply cupped, as though it were a case of glaucoma. Central vision, equal to counting fingers at 12 inches; there was no nasal field. T. n.

This condition had existed before birth, as there had never

been any subsequent inflammation of the eyes. In every respect the right eye was normal.

The author explains the causation of this rank anomaly upon the theory advanced by Treacher Collins, that the posterior layer of the cornea and the pupillary membrane being of the same embryonic origin, fail to separate when the anterior chamber begins to form.

B. C.

Astigmatism After Cataract Extraction as Modified by the Coniunctival Flap.

CLARK, C. F., Columbus, Ohio (Ophthalmology, vol. I, No. 4, July, 1905). This paper is a supplement to one which was published in 1899.

Astigmatism of a moderate degree is of common occurrence after cataract extraction, vet Clark is of the opinion that it stands as an evidence of some defect in the operation or in the healing process. It may be measured accurately by means of the ophthalmometer; the degree of it serves to gauge the accuracy with which the edges of the wound have remained in coaptation. In this present series Clark presents the results in the degree of astigmatism following upon a modification of the usual incision, and from a change in the form of past operative dressing. He contrasts this series with his earlier one. in which were shown the results of 30 cases of simple extractions as compared with a similar table published by Aubrey Lippincott, in which was detailed the effect on the corneal curvature in cases in which a preliminary iridectomy had been performed. Lippincott's mode of operation consisted in a downward incision and of a small iridectomy. Clark's earlier mode was to place the incision between the line of clear cornea and the limbus, and to complete the incision by slightly turning the knife forward. That of his present series is to make a good conjunctival flap by maintaining the knife further backward, yet parallel with the plane of the iris.

This series includes only such cases as were studied to a satisfactory conclusion; these are simple and uncomplicated cases, and all cases of after-cataract in which the visual acuity of $^{20}/_{40}$ had not been obtained were excluded. The data are compiled from only nine out of 30 cases considered.

In six cases in which the measurements were made from nine days to six weeks after operation, the average astigmatism was 2.92 D.; in the former series it was 3.95 D. The average primary astigmatism in nine cases, nine days to six months after operation was 2.66 D., while the average maximum primary astigmatism was 4. D., and the minimum primary astig-

matism was 1. D. The average vision ${}^{20}/_{27\cdot77}$ (${}^{5}/_{6\cdot91} = {}^{5}/_{7}\cdot +$). These results show a distinct gain over the earlier series, though they were not equal to Lippincott's, except in the effect upon the visual acuity.

B. C.

Ophthalmometry.

GIBBONS. EDWARD E., Baltimore (Obhthalmology, July, 1905). All the light that enters a lens from an object does not aid in the formation of its image, but some undergoes reflection at the surfaces of the lens either passing out again and becoming lost or after being reflected by the posterior surface of the lens to the anterior it passes out of the lens behind and thus interferes with the distinctness of the image. The incident light may then be divided into three portions, namely: The useful or image forming rays, the lost or those which pass out of the lens anteriorly, and the harmful rays of those which pass out of the posterior surface of the lens and interfere with the distinctness of image-formation. In ophthalmometry there is about 33 per cent, of light lost by reflection in the instrument. The eve probably loses only about 2 per cent, of light in its image formations—less than any other optical instrument. Images formed by the lost light are called the images of Purkinje. Of these catoptric images, there is one from each surface of the cornea and one from each surface of the crystalline lens. By the study of the images of Purkinie we can locate the internal refracting surfaces of the eve. Their study constitutes ophthalmometry, by which term we imply the mensuration of the surface of the dioptric media of the eve; unless otherwise indicated keratometry or mensuration of the anterior surface of the cornea is implied. There are practically but three surfaces which give rise to astigmatism, namely: The anterior surface of the cornea, the anterior and posterior surfaces of the lens. Astigmatism of the anterior surface of the cornea of a diopter or over may be recognized by Placido's disc. The cornea may be divided into two parts; a central one which more or less spherical and may be called the optic part, and a peripheral or flatter one which we call the basilar part. The optic part includes that portion of the center of the cornea which does not differ more than a diopter from the central refraction. Its extent varies in different eves. The following are the limits of the optic part compared with those of the entire cornea.

	Optic part. En	ntire cornea.
Outward	16.5 D.	44.7 D.
Inward		
Above	12.5	38.5
Relow		42 2

These figures are taken from the measurements of 24 eyes. The principal seat of astigmatism is the anterior surface of the cornea, and this is not strange, since it is at this surface that the principal change of index of refraction occurs: so under ordinary conditions, then, it is this surface that especially determines the amount of astigmatism and examination of this surface plays an important part in the refraction of the eve. The basis of ophthalmometry is the formula: F=IXD in which F stands for the focal length of a mirror: I its catoptric image: D the distance of the object from the mirror; and O the size of the object in lineal dimension. The author concludes that a good ophthalmometer is an essential to him who refracts his patients subjectively, but to the one educated in retinoscopy (the only accurate objective test) it is of little use save in confirming the direction of the chief meridians. HGG

Two Cases of Functional Strabismus.

ROOSA, D. B. St. JOHN. (Medical Record, Sept. 2, 1905). under the above title, reports two cases of "functional strabismus." Of the two cases, one was a convergent squint, followed by amblyopia exanopsia, which was cured by the use of glasses: the exclusion of the good eve at intervyls, and the use of stereoscopic exercise. This last case is especially worthy of note in consideration of the fact that the child was not so blind when first seen as it was when it returned later and was relieved by the exercise of the eve. It is still questioned by some good men that there is such a thing as amblyopia exanopsia. One case closely observed goes a long way toward disputing these authorities. Another fact worthy of note is that such results were obtained after long years of effort, on the part of the patients as well as the doctor. Such results should stimulate others to exercise more patience in the method of non-operative treatment of strabismus O. W.

On the Various Methods Employed for Localizing Foreign Bodies in the Eye by Means of the Roentgen Rays.

WEEKS, JOHN E., New York, (Ophthalmic Record, June, 1905). The great value of the x-rays as a means of localizing foreign bodies in the eye is now universally conceded. The use of the ophthalmoscope, the sideroscope and the magnet is limited. The ophthalmoscope may be employed to determine the presence of a foreign body in the fundus where there is no hemorrhage. The sideroscope when properly constructed and mounted, is of value in indicating the presence of a magnetic body in the eye or its vicinity, if proper care is taken to exclude

any other bodies from the "field" of the needle. It is only capable of determining the direction of the foreign body. Only the giant magnets are of much diagnostic importance and these in cases where the magnetic bodies are of sufficient size and are located in the anterior portion of the eye. If the magnetic body be small, or if it is situated deeply in the tissues of the orbit. the magnet often fails as a means of diagnosis, besides the giant magnet may produce injuries to the tissues of the eye by sudden and forcible movements of the foreign bodies. The x-rays are harmless, as used at the present time, for localizing foreign bodies in the eve and orbit; and they are applicable to all foreign bodies that are opaque to the rays. The degree of opacity of most metals varies with their density. X-rays are of no value in locating splinters of wood. The absolute necessities for the location of the foreign bodies in the eve are the following: First, a means of developing a suitable supply of x-rays. Second. a suitable source of x-rays. The author prefers the Crookes tube, of which one of the best is a heavy anode Gundelach tube. Third, a head rest that will assure the immobility of the head as far as possible during the period from the beginning of the first to the end of the second exposure. Those head rests which are used with the patient in a recumbent position are probably the best. The author prefers the position of Sweet and Dixon to those of McKenzie Davidson and Hulen. Fourth, a plate holder which will permit the plate to be inserted and removed freely, will hold it firmly in proper relation to the head and which possesses the proper registration. Fifth, a suitable tube holder. This condition will be met by a tube holder that is sufficiently firm and will permit of a satisfactory adjustment of the distance of the tube from the photographic plate and permit of movement in all directions. Sixth, the proper relation of the patient's head and eyeball to the plate. It is desirable that the part to be skiagraphed be in the anodal axis as near as possible, as the clearness of the shadow is greater and the time of exposure is less. It is important that the sagittal plane of the head should be exactly parallel to the plane of the photographic plate and the horizontal plane of the head should correspond with the horizontal wire in the plate holder. This is to be obtained by the patient fixing with the sound eve. a small object placed at a distance of about a meter from the eve at a point where the vertical plane of the eye containing the foreign body would cut the horizontal plane of the same eye if both planes were extended. No movement of the eye or head can be permitted during the time of making the exposure. All proper methods of localization depend upon the determination of the three co-ordinates, x, y, z, which fix the position of a given point in space. This is done by triangulation. The location of a foreign body may be compared with the known location of a small object which is termed a "marker." Sweet employs two "markers." one of which is placed immediately in front of the center of the cornea. The second is placed 15 mm. from the first and on the same horizontal plane. The distance of the first ball from the center of the cornea is measured and recorded. Dixon uses a small metal ball fixed to a head band that can be adjusted before the center of the cornea.

Some Ophthaimic Suggestions.

KALISH, RICHARD, New York, (Medical Record, June 3, 1905). Under the above title, Kalish makes some judicious remarks in regard to the evils of the promiscuous advertisements in the daily newspapers of the so called medical discoveries pertaining to the eye, the evil of the outery against the use of glasses by the children, and the damage done by the opticians. The objection to the wearing of glasses by the young is often sustained by the general practitioner. When there is a defect in a child's eve which causes a nervous strain, and a defective vision, it is just as much the general practitioner's duty to recommend a correction as it is to recommend the use of a crutch to the lame. The general objection to the early treatment of souint in a child also is a widespread evil and one that ought to be avoided. The self fitting glass by the so-called optician. department stores, etc., is such an evident evil that it is strange that the public in general cannot see it. The so-called refractionist does not give the proper correction in 20 percent, of his cases. The unfortunate circumstance in regard to the so-called refractionist is that he does not know how little he does know. A six weeks' course at some spectacle maker's work house; or, as is often the case, a purchase of a few glasses and a test case, is his sole information. Precocious indeed must be the man who can acquaint himself with the ametropic disturbances and ocular diseases in so brief a period. ow

Magnetic Properties of Steel Alloyed with Other Metals.

Sweet, William M. Philadelphia (Ophthalmic Record, June, 1905), gives an exceedingly interesting article upon the magnetic properties of the various steel alloys, the so called steel hardening metals, including chromium, manganese, and a few rarer metals as tungsten, and molybdenum. Nickel is more extensively used than any of the other steel hardening metals owing to its cheapness. Both nickel and iron are metals of strong magnetic properties. In the higher percentage of nickel

there was found a decided decrease in the induction in the pieces examined. Thus in three pieces of nickel steel and one of ordinary steel, each of four mm. cross section, tested on the end of the magnet with the tip removed, the following power was found necessary to overcome the magnetic plate and detach the pieces from the magnet: Bessemer steel, eight pounds; nickel steel, 3.5 per cent, seven and three-quarter pounds; nickel steel, 32 per cent, two pounds. The author gives a table of the maximum induction of various specimens.

O. W.

Recurrent Iritis-A Study of Nine Cases.

Woods, HIRAM, Baltimore, Md., (Ophthalmic Record, July, 1905), under the above title comments upon the lack of literature upon this subject. There is no reliable method of preventing recurrent iritis. The causes are, in the main, constitutional. DeSchweinitz says the recurrences are unncommon in syphilitics, but the opposites are true, in respect to both the rheumatic and gouty forms. It neither follows immediately upon urethritis, nor is coincident with it, as arthritis intervenes. DeSchweinitz thinks there is no adequate proof that synechiæ can cause recurrence of iritis, but the tendency of the rheumatic form to recur. requires preventive treatment in the form of regulation of diet. use of mineral waters, and proper attention to change of clothing according to the vicissitudes of the climate. Fuchs is of the same opinion. Rheumatic iritis often coincides with the return of joint symptoms. Fuchs is of the opinion that gonorrheal iritis does not usually come until after arthritic disturbances. The causes of the original attack in Woods' cases were the following: One contracted gonorrhea two years after his rheumatism and after he had experienced his first iritis. In two cases there was gonorrheal arthritis, limited to one joint, that of an ankle in one case and a knee in another, and then iritis. In one case the primary iritis was syphilitic. In two cases the assigned causes of the primary attack were, glare from the water, and "unknown" causes. In the families of these iritics there was a history of rheumatism and Woods was disposed to attribute the iritis to these hereditary tendencies. The general belief is that each attack is less severe in these iritic cases: another fact worthy of note is that one eye usually bears the brunt of the disease. Preventive iridectomies were not, as a rule, successful. The dietetic treatment was not effective. Often they come back when sent to their family physician with printed slips which they observe until a new attack, after which they pay no attention to special diets without any more frequent recurrences of attacks. Unless there is a special evidence of rheumatism and gout, dietetic treatment would probably not be so beneficial as a general supporting diet. Woods advocated the preventive use of atropin in two cases on the evidence of any return of the iritis. In one instance, the eyes were kept constantly under a weak atropin solution, the withdrawal of which would be followed by an attack of iritis. He is of the opinion that the general truth underlying the recurrence of iritis is that there is a constitutional dyscrasia, as rheumatism or gonorrhea, always present; and that the exciting cause of the relapse is one or another of numerous irritants which can produce hyperemia, as an attempt to use an eye rendered more or less incapable by disease, error of refraction, or exposure.

O. W.

injuries from Bursting of Locomotive Water and Oil Gauges.

CONKEY, C. D., Superior, Wis., (Ophthalmic Record, May 1905), presents a paper under the above title, in which he urges the necessity for the use of a protective wire screen over all glass gauges on locomotives. Much has been written about the visual acuteness and color sense of railroad men, yet little has been written about the eve accidents to which the employees are subjected. Dr. Conkey reports four cases of injuries to the eve from bursting of either the water gauge or of the oil gauge on the engine. The sudden explosion of the glass tube, followed by the rush of steam, is very disastrous to the unfortunate eve that comes within its range. It is rather peculiar that these accidents, being as common as they are, should not have received more attention from the medical profession. The injuries from the glass could easily be obviated by having the glass gauge screened. The subject is worthy of being called to the attention both of the profession and owners of the railroads.

O. W.

The Pathology of Pterygium.

Johnston, Richard H., Baltimore, Md., (Ophthalmic Record, April, 1905), under the above title has reviewed in detail the pathology of pterygium. Fuchs claims that pterygium always arises from pinguecula which has undergone degeneration, and pushes itself, as it were, over the cornea, carrying with it the conjunctiva. Another view of this growth is that it is due to an ulceration at the margin of the cornea. Fuchs's opinion is disputed by Knapp. Savage and others. DeSchweinitz claims that the growth may arise from the conjunctiva, above and below the cornea, claiming that the presence of the pinguecula is not necessary for its development. Very little is to be found in the text books in regard to its histology. Ball, in his late work, says that the "histologic examination shows that a pteryg-

ium is simply an hypertrophy of the conjunctiva which involves the epithelial and anterior elastic layers of the cornea." Johnston's examination reveals the following: With the low power. the specimen shows an epithelial layer covering a thick mass of connective tissue. The epithelial layer varies in thickness—at one point it sends a cone shaped process down into the connective tissue, and at another a thick mass resembling the fingers of a glove. With the high power, the epithelium can be divided into three distinct layers. The outer layer is decidedly flat. Next to the connective tissue the cell become cylindrical, with elongated, deeply staining nuclei. The connective tissue is made up of rather loose fibres running in every direction. No granular or cyst formation is present in this section as has been reported by some authorities. The section presents a strong similarity to those found in vernal catarrh, showing an hypertrophy of both the epithelial and connective tissue layers of conjunctiva. ow

An instance of Parinaud's Conjunctivitis

GRIFFIN, C. A., Ann Arbor, Mich. (Ophthalmic Record, May, 1905), reports a case of Parinaud's conjunctivitis. A child 14 years of age consulted him in regard to her left eve. which had been irritable for some days. On examination, the following was presented: "Situated on the retrotarsal fold was a mass of polypoid granulations between which were observed a few areas of superficial ulcerations. An erosion was also present on one of the large granulations. The two larger granulations, which rested on either side of a large central ulcerated area, were somewhat pedunculated and presented an anemic. translucent appearance, while the smaller granulations were reddish grev in color and irregular in outline. A small amount of thick, glairy secretion obtained about the peduncle of the larger granulations. Aside from these alterations and a slight injection of the ocular portion of the region of the lower fold, the conjunctiva presented an otherwise normal appearance." Treatment of the condition was instituted. This consisted in the removal of the larger granulations by means of scissors and a subsequent daily application of argent, nitrat, grs. xx ad oz., to the remaining granulations. In the course of a week, however, when the granulations were disappearing under the above treatment, it was observed that the pre-auricular glands on the corresponding side of the head were rapidly enlarging and becoming painful to the touch, as well as to the motion of the jaw. This continued until it was feared that the glands would suppurate. This, however, did not occur, and in a few

days resolution took place. As the swelling of the pre-auricular glands decreased, there was no infection about the eye. In this case there was no evidence of a possible animal origin of the infection, unlike the several instances which Parinaud has reported.

O. W.

Removal of the Lens in Myopia.

BARNES, JUSTIN L., (Medical Record, June 17, 1905). Ablatio lentis, or removal of the lens in a high degree of myopia, is now a well established feature in ophthalmic surgery. The author enters upon a somewhat detailed study of the subiect in general. This operation was probably first proposed by Desmonceaux, who in 1776, suggested the idea to Wenzel. The latter removed a lens, but the result was unsatisfactory and nothing more of real value was heard of the matter until 1858. when Mooren, of Duesseldorf, attempted the operation, but also failed. Fukala, in 1889, brought the matter again into prominence. Fukala probably deserved more credit for the operation than anyone else. He has done more for the operation and has been more successful than most of his followers. The operation is performed more frequently in Europe than in America. The selection of the case for operation depends upon the age of the patient, and the degree of myopia: as a rule, the younger the patient, the more favorable the case; however, the lens may be removed at any age. It is usually considered that the degree of myopia must be about 14 or 15 dioptres or more. Other considerations influencing the selection of operative cases are: Cases in which vision is not improved by glasses; when there are no serious fundus lesions; when the vision is very low, even with the very best of glasses; and where there is divergence and no longer binocular or single vision. There have been about 2500 cases of these operations reported abroad, while the author finds only about 50 cases in America. The methods of operating are: First, by direct linear extraction in the young; second, direct extraction after the usual cataract methods in patients over 50: third, repeated discissions; fourth, discissions with linear extraction. Direct linear extraction does not, as a rule, meet with approval. This is due to the fact that it is difficult to know when all or a greater part of the lens has been removed and is accompanied by the danger of loss of vitreous humor. Some operators in America prefer to remove the lens by repeated discissions. This method has the advantage of a certain degree of safety but is open to the serious objection of consuming a greater length of time. operation, namely free discission, with linear extraction, is,

in the light of wide experience, the now well established method of oblatio lentis. This operation bears Fukala's name, and justly, because this operator was the first to work it out and develop it and exploit it with success in a very large number of cases. The dangers accompanying this operation are: First, hemorrhage and loss of vitreous humor; second detachment of the retina: third, incarceration of the iris or capsule: fourth, glaucoma; fifth, iritis; sixth, infection. The liability to hemorrhage and loss of vitreous humor is very slight. occurring, as a rule, where there is some macular lesion, or faulty technique. Detachment of the retina occurs in only 3 to 5 per cent, of cases. Incarceration of the iris or of the capsule depends very largely upon the site of the incision, the toilet of the wound, and the management of the case afterward. Glaucoma can be avoided by the extraction within a proper interval after the operation, and it should not occur in carefuly watched cases. Iritis does undoubtedly occur in certain instances, but it can be dealt with in the myopia operations with confidence and satisfaction. The dangers of infection are almost entirely excluded in these days of antisepsis. The author is of the opinion that the operation of ablatio lentis is entirely justifiable in suitable cases, and that the operation of Fukala is the operation of choice. O W

The Treatment of Inoperable Cases of Malignant Diseases of The Orbit by the X-Ray.

BULL, C. S., New York, (Medical Record, June 24, 1905) in reviewing the reported cases of cure of malignant diseases of the orbit, found that they were most all wanting in detail. Many cases reported are of little value on account of want as to histories, the number of sittings or the amount of exposure. The effect of x-rays on malignant growths gives, as a rule relief from pain. It ameliorates the symptoms for a time. There seems no doubt that epithelioma and carcinoma yield more readily to their influence than does sarcoma. Many cases have been reported, but few have been completely cured. The author mentioned the fact observed by many others, that metastasis is more frequently seen in cases treated by the x-rays than those subjected to the knife. The writer has not observed any of the dangers or evils arising from the x-rays which have, from time to time, been reported, such as an opacity of the cornea, neuritis and cellulitis. The writer presents in detail reports of 10 cases of his own private practice in which the x-ray treatment was used after use of the knife; of these 10 cases, two were much improved, if not entirely cured. Of these two cases, one was an epithelioma and the other a carcinoma. The remaining eight cases in which no effect was produced by the x-rays were all sarcoma. The power of the x-rays decreases in proportion to the depths of the wound from the surface. They are evidently less effective in sarcoma than in epithelioma or carcinoma.

Immature Senile Cataract.

BULSON, A. E., JR., Fort Wayne, Ind. (Journal A. M. A.. Sept. 23), discusses the propriety of operation for the removal of immature senile cataract. He would operate in slowly progressing cases in which there are no contraindications aside from the semi-transparency of the lenses, and in which vision is so far impaired as to prevent the reading of ordinary type, the patient having been fully informed as to the possibilities of secondary cataract requiring discission and mild postoperative inflammation with delayed recovery. The essentials of a successful operation removing practically all of the cortex with a minimum amount of trauma and subsequent inflammatory reaction, and favoring such after treatment as will limit the inflammation and promote resorption are: 1. A large corneal section, embracing not less than two-fifths of the corneal circumference: 2. an iridectomy with a fairly large coloboma extending to the ciliary border: 3, a large opening in the capsule by two incisions at right angles to each other; 4. gentle irrigation of the anterior chamber with a sterile normal salt solution, after the extraction of the nucleus, if much cortex remains: 5, the early and free use of atropin, and, 6, the use of dionin, after the corneal wound has closed, to promote resorption of lens debris. The irrigation must be done with the utmost delicacy; the method he prefers is that of Lippincott, allowing a continuous stream to flow by gravity through a small specially constructed cannula introduced just within the lips of the corneal wound, the flow being completely under the control of the operator. To anticipate the slight iritis that is likely to occur, he begins the use of atropin at the time of the first dressing, from 36 to 48 hours after the operation. Bulson believes that the final results of removal of immature senile cataracts should compare favorably with the extraction of cataract in any stage. His personal experience with 25 cases has been very satisfactory. The article concludes with a long series of opinions of prominent ophthalmologists, obtained by correspondence, most of which express views largely in agreement with those of the author.

Arabian Ophthalmology.

HIRSCHBERG, L. Berlin (Journal A. M. A., Oct. 14), gives an interesting account of the Arabian literature on the specialty of ophthalmology. He shows that while the Greeks, their predecessors in this line, produced in the thousand years from Hippocrates to Paulos, only five works on ophthalmology, none of them by a specialist, the Arabians, in the shorter period of 500 years from 800 A. D., brought out over 30 textbooks, the majority by specialists, and fourteen of which exist today. There were among the Arabs special divisions in general hospitals for the ocular diseases and special eve clinics institutions not to be found in Europe before the end of the eighteenth century. We are indebted to the Arabs for our descriptions and nomenclature of the anatomy of the eye, for the first attempts at solving the comparative anatomy and physiology of the organ of vision, for the first recognition of refraction, and for still other matters in which they were in advance of Western Europe by hundreds of years. The opinion of August Hirsch that the Arabs did not contribute to the progress of ophthalmology is incorrect; their contributions are remarkable and should not be ignored. They were the only masters of the speciality in medieval times.

Iritis Tuberculosa.

GAMBLE, W. E., and BROWN, E. V. L., Chicago (Journal A. M. A., Oct. 14), reports a case of plastic iritis producing nodules which was indentified by a process of exclusion and still more by the tuberculin reaction, as tuberculosis. The treatment was by repeated injections of Koch's tuberculin and the use of atropin continued over six months and causing disappearance of the ocular conditions. There was evidence of a tuberculous focus elsewhere, to which the eve symptoms were probably secondary, as shown by a persistent rise of afternoon temperature, slight cough and enlarged supraclavicular glands. The afternoon temperature continued after the disappearance of the eve symptoms. The authors give a detailed review of the literature of the use of tuberculin in the eye, and conclude that there is very little question of its diagnostic value. Their own experience leads them to advise the lowest possible dose on account of the profound general reaction they met with from a five rng, injection. Less can be said of its therapeutic value, but they think that many patients, like the one reported, can be helped. The article is illustrated and closes with what appears to be a rather complete bibliography.

Cylindroma of the Orbits and Lids.

Weeks, J. E., New York (Journal A. M. A., Sept. 30), reports two cases of this type of tumor, characterized by the formation of hyalin cylinders and tubules, both occuring in the orbit or eyelid. He remarks that these tumors contain tissue developing from both mesoblastic and epiblastic tissues and are, therefore, properly termed tumors (but that the hyalin change is so characteristic that the retention of the name cylindroma is justifiable. From the reported cases these growths seem to be less malignant than ordinary sarcoma and carcinoma, but they require very thorough removal. If the occeous tissue is involved it should be removed. Metastases are rare. The age incidence ranges from 17 to 72 years in the reported cases. A number of cases have developed after traumatism.

Differential Diagnosis of Intraorbital Tumors.

TIFFANY, F. B., Kansas City, Mo. (Journal A. M. A., Sept. 30), remarks that, as in the case he reports, a differential diagnosis of the nature of an intraorbital tumor can not always be made, but that as a rule, with careful examination and definite knowledge of all the symptoms, one can be fairly certain of the real nature of the growth. Malignant tumors run a rapid course and sooner or later cause pain, sometimes severe, and if unchecked they destroy vision and attain enormous dimensions. Benign tumors, on the other hand, grow slowly, rarely cause pain, and do not usually destroy vision, unless they produce optic neuritis and atrophy by pressure on the optic nerve. One symptom, proptosis, is common to all forms except a luxated lachrymal gland, and the direction taken by the exophthalmos indicates the locality of the tumor. If on palpitation the growth is hard and immobile, it is probably osseous, especially if of slow development. If soft and fluctuating, it may be serous, phlegmonous or sanguinous. If soft and yielding without fluctuation or pulsation, it may be fatty, as a lipoma. If less yielding, it may fibroid or glandular, as an adenoma, Pulsation and bruit ceasing with pressure on the carotids, characterize vascular tumors, but it is difficult to determine the varieties of pulsating tumors. The vascular are more resistent than aneurisms, and patients with angioma complain of a knocking, roaring or buzzing in the head and ears. In angioma, in all cavernous tumors and in aneurisms, the exophthalmos is reduced on pressure or when the patient takes the supine position. Tiffany reports at length a case illustrating some of the difficulties of diagnosis.

A Discussion on Intraocular Tuberculosis.

Jessop, W. H. (British Medical Journal, Aug. 26, 1905). At the annual meeting of the British Medical Association, held at Leicester in July, 1905, the subject of tuberculosis of the eyeball was considered. The discussion was based upon the following questions: 1—The relative frequency of primary intraocular tuberculosis. 2.—How often was chorioiditis met with in acute miliary tuberculosis? 3—What was the value of tuberculin, (a) as an aid to diagnosis, (b) as treatment? 4—What was the danger of dissemination as a result of excision in intraocular tuberculosis? 5—In tuberculous affections limited to the chorioid was there little tendency to pigmentation or searing of the retina or chorioid, and were vitreous opacities seldom present? 6—How often is chronic phthisis, especially pulmonary, were there chorioidal lesions? 7—In chronic chorioidal tubercle, what were the signs of "obsolescent tubercle?"

Mr. Jessop doubted if primary intraocular tuberculosis ever existed; he had never seen an authentic case. Thirty to 35 percent, of miliary tuberculosis gave evidences of chorioditis before death and about 50 percent, post mortem. He has not had much experience with tuberculosis; old tuberculosis is untrustworthy, if not harmful. Yet, from the results obtained by others, he would try it as a means of diagnosis, and for treatment; the dose at the start being not greater than 1/500 mg.. and then gradually increased to 1 mg. Unless there was a great deal of pain, or the condition was telling on the patient's health, excision should not be done; fatal tubercular meningitis was likely to intervene. In such cases tuberculin had saved the eyes and the cases were cured. Jessop had never seen vitreous opacities in miliary tubercle of the chorioid; neither had he seen them in his cases of chronic tubercle. But small change takes place near the tubercle. At St. Bartholomew's no case of chronic pulmonary phthisis had been noted as having chronic chorioidal changes also. In 119 cases of chronic tuberculosis in children, Dr. Carpenter and Mr. Stephenson found chorioidal changes in 11, i. e., 9.24 per cent, which they arranged into four groups: solitary, multiple, disseminated, and diffused. Tessop's two cases of obsolescent tubercle were the only ones he knew of in which the presence of the bacilli, or inoculation experiments, had made the diagnosis sure, and the lapse of years enabled the so called obsolescent changes to be seen. In these, the changes were not in the macular region, but started near the These were distinguished from syphilitic disease by the absence of much scarring and the total absence of pigmentation. Professor Hess, of Weurzburg, stated that he had employed

old tuberculin in 18 cases, and TR in 8 cases for diagnostic purposes. In three cases there was general reaction, and in two cases local reaction. Among the cases of iritis, a general reaction was present in more than 50 per cent. It was also present in a recent case of chorioiditis and once in a case of keratitis parenchymatosa. He had never observed any ill effects from tuberculin employed therapeutically. In the case of iritis with strong local reaction there was an evident improvement after its use.

B. C.

Capsular Complications After Cataract Extraction.

COLLINS, TREACHER (British Medical Journal, Aug. 26, 1905). Mr. Collins classifies the complications under two headings:

I-Those resulting from the adhesion of the lens capsule to the extraction scar. The most serious conditions arise when the capsule lies in the wound, acting as a foreign body and delaying indefinitely the firm healing of the scar. Severe iridocyclitis usually follows, and sympathetic inflammation of the fellow eve may occur. When the capsule becomes adherent only with the wound the condition is less serious. Healing is not delayed, but there is always the dangerous tendency to the development of glaucoma from the iris being drawn forward by the capsule, with the consequent closure of the angle of the anterior chamber. This may occur even when iridectomy has been performed. Simple extraction was less liable to lead to adhesion of the capsule than was the combined operation. The hyaloid membrane may become adherent to the capsule, which, from drawing the iris forward, may cause glaucoma. The risk of adhesion is less if the capsule is torn by forceps than when cystotomy is performed. Blocking of the anterior chamber appears to be inevitable when this complication occurs. Collins has relieved tension in two instances by dividing the capsule in the way Lang's knives are used to divide anterior synechiæ.

II—Complications resulting from opacity occurring in connection with lens capsule after extraction. The causes leading to this condition are (a) retained lens substance; (b) wrinkling of the anterior capsule with new growth cells binding it; (c) adventitious fibrous tissue. The first two can be prevented if instead of incising the capsule with the cystotome, forceps are used to tear the capsule. The development of fibrous tissue is usually the result of iridocyclitis, or sometimes the organization of a blood clot on the capsule may produce it. In 100 cases observed by Collins since 1899, in which the capsule was removed by forceps, his rule has been to needle when the vision was below 6/18. In these 100, only 15 required subsequent

needling, and no case required second needling; in a second 100 only four required needling. By this method he found 25 per cent got full $^{6}/_{6}$ vision with only the single operation. He doubts if any other procedure would produce such good results.

B. C.

False Hay Fever.

HARMAN, N. B. (British Medical Journal, Aug. 26, 1905). Harmon cites an instance in which symptoms resembling hay fever were pronounced, yet were produced by eyestrain and were relieved by the wearing of proper glasses.

B. C.

Conical Cornea and the Hot Air Cautery.

GROSSMAN, K. (British Medical Journal, Aug. 26, 1905). In the treatment of conical cornea, Grossman employs a current of hot air generated in a Paquelin cautery as modified for this purpose by Hollander, of Berlin. The reduction of the necrosis is effected by repeated applications of the superheated air, which destroys the superficial layers of the cornea with consequent contraction of the affected area.

B. C.

The Effects of the Pressure of Adenoids and Other Abnormalities in the Nasopharynx on Some Affections of the Eyes.

HERN, J. (British Medical Journal). The ophthalmic conditions noted as accompaniments of nasopharyngeal affections are without doubt secondary to and dependent upon those of the nasopharynx and appear to be due to the marked lowering of the general health, and by the actual extension of the inflammatory process up the nasal duct to the eye. The diseases of the eye most commonly found associated are phlyctenular conjunctivitis, sluggish non-inflammatory ulcerations of the cornea, eczematous keratitis, and a peculiar irritability of the retina producing obstinate photophobia. In all cases with such ocular symptoms, careful examinations of the nasopharynx should be made and all defects should be treated.

B. C.

Evolution in Blepharoplasty.

Benson, A. H. (British Medical Journal, Aug. 26, 1905). The "St. Mark's hospital operation" is as follows: The patient is anesthetized, and a Snellen's or Knapp's clamp having been applied to the lid, with a Graefian knife an incision is made along the whole length of the free border of the lid in such a way that all the cilia are contained in the anterior or skin flap, and no cilia in the posterior or conjunctival flap. The incision is made at least one-quarter inch in depth and rather obliquely forward to allow the wound to gape freely. Anyhow, bulbs in the posterior segment can be dissected out. A second clamp is now applied to the patient's lip and two parallel incisions are

made through the mucous membrane. The length of these incisions is rather shorter than the incisions in the lid. The ends of these incisions are now converged so as to make the flap pointed at each end. With scissors and forceps, this flap is dissected and placed on the finger of the left hand and all submucous fat and connective tissue is cut away. A silk suture is then passed through the end of the flap and it is sutured into one end of the gaping incision in the lid. The other end is similarly sutured, and each edge is fixed by two or more sutures to the corresponding edges of the lid incision. A knot in the silk suture used to fix the extremities of the flap considerably aids its accurate adaptation. A dressing of boric ointment is applied to the evelid and a simple turn of abandage is applied. The sutures may remain in four or five days. The operation is equally suitable to the upper and lower lids. and to all varieties of trichiasis, with or without entropion. The result is permanent. RiC

Congenital Absence of the Dilator of the Pupil.

GROSSMAN, K. (British Medical Journal, Aug. 26, 1905). This anomaly was noted in a healthy girl of 5 years of age. The pupil of the right eye is eccentrically placed upwards and inward, and forms a narrow and inward. The iris trembles. The slit like opening divides the membrane irregularly. In the broader outer part there are a number of folds. No capsular reflex is obtained in the black pupil. The lens is wanting, although an opaque mass which may be momentary lens is seen floating in the vitreous. After repeated instillations of atropia, there is only a slight widening of the pupillary slit, whereas when eserine is applied marked and painful contraction occurs. The left eye presents almost identical conditions.

A Case of Amblyopia, apparently Toxic, following Influenza.

SHAW, C. F. (British Medical Journal, Aug. 26, 1905). Shaw reports a case of amblyopia without fundus changes. following profound infection of influenza. There was rapid failing vision even to 1. p., only. The pupils were dilated. paresis of the left internal rectus, drooped eyelids which gave a sleepy appearance. The right arm and the legs became numb. After a month these symptoms began to abate; in six months, normal health had been regained, but the vision of the left eye was only slowly improving while that of the right eye was 1-24.

Cases of Abnormal Eye Conditions—Reported From the Bath Eye Infirmary.

BEAUMONT, W. M. (British Medical Journal, July 8, 1905). The first case is one of retinitis punctata albesceus which had probably existed since intrauterine life, and is probably due to retinal sclerosis .V—°/6 in spite of the involvement of the yellow spot. In a case of Graves' disease, each upper lid was of a brownish hue, the pigmented patches being sharply defined and strictly confined to the lids, and quite symmetrical.

The Perception of Light and Color.

EDRIDGE-GREEN (British Medical Journal, July 22, 1905). In this paper. Edridge-Green shows how his theory explains the facts of light and color vision. He assumes that light falling on the eye liberates the visual purple from the rods and a photograph is formed. This decomposition of the visual purple chemically stimulates the ends of the cones and a visual impulse is set up which is conveyed through the optic nerve fibres to the brain. These visual impulses differ in character according to the wave length of the light causing them. nerve fibres pass to the visual centers, where only white light is perceived and transmitted. The center is acted upon by impulses caused by all rays of light, the color perceiving center • being concerned with the quality of the impulse within the power of perceiving differences possessed by that center, or portion of it. The theory is therefore dependent upon two hypotheses—one retinal, and the other cerebral. passes in review a number of facts of light and color vision in support of his theory, and he discusses the evolution of color sense; color blindness; color mixing; the color vision of the periphery of the retina; and color contrasts. It was found after the examination of the retinas of monkeys which had long been kept in the dark, that the visual purple was found in the vellow spot situated between and not in the cones.

A New Test for Visual Acuteness.

Berry, G. A. (British Medical Journal, Aug. 26, 1905). In connection with visual acuteness, there are two points which can hardly be said to be definitely settled. The one has reference to the scale according to which practical amounts of the full normal standard should be estimated. The other takes in the nature and configuration of the test objects which may be most suitably used when the scale has been decided upon. In Berry's opinion, two conditions must be satisfied: First, the

scale of greatest efficiency must be correlated in some way to the ordinary scale of visual acuteness; and, second, it must admit of some degree of variability, or elasticity, so as to meet the requirements of varying conditions. Also the scale should take the efficiency value of each eye separately, and in such a way that while full efficiency corresponds to full acuteness, zero efficiency must be assumed to be arrived at before zero acuteness.

He proposed to use, instead of Snellin's letters, a number of alternately black and white squares of the same size as the spaces occupied by letters. The way in which these quadrillated surfaces are seen depends upon the distance at which they are placed from the eye and the degree of the eye's acuteness. Berry uses squares of 1, 5, 3, 6, and 12 mm, size, subtending angles of 1¹, 2¹, 4¹, and 8¹ at 5 meters. At and beyond some particular distance, according to the acuity, these surfaces no longer appear checked, but either run into lines or simply look uniformly grey. The appearance of lines is due to the eye's astigmatism.

A paper dealing with radical changes in the accepted tests for visual acuity ought to be read in its entirety and should not be judged by a brief extract only.

B. C.

Dionin.

SNYDER, W. H., Toledo, Ohio, (Journal A. M. A., Nov. 18). says that he has been unable to find any reported experiments bearing on its action on tissues and cells, and cites his own, in which the drug was applied directly to the eye of a rabbit in larger quantities than would be required for an abnormal eye. Sections were made of the enucleated eye and the findings noted. He concludes that the action of dionin is purely local, its most marked effects are in eveballs in which tension is increased, and he believes its entire action can be explained by saying it has some disassociating action on the intercellular cement substance, allowing a transudation of serum from a globe under pressure. Its analgesic effect is explainable by its lessening of tension and by the well known action of the derivatives of opium. He believes that it is only a lymph stimulant secondarily; after the edema the fluid is absorbed as lymph, as it would be in edema from any cause. He reports a case of complete absorption of the iris, lens and capsule under the use of dionin in a case of severe contusion of the eye without penetration. In iritis with adhesions and plus tension, it lessens the tension and permits absorption of the mydriatic with resulting relief of pain and dilation of the pupil. In corneal ulcers, especially of the pair process begins as soon as the ulcerecent the inflammation and the higher the results from dionin according to Screent cases of corneal opacity he has little or no benefit in old central opacititension. He has tried it in conjunctive special success, the pressure element leads for the cause. In glaucoma he preference has than with any previous treatment, the little of for the cause. In glaucoma he preference pain being marked, due, he think lief from pressure. He early abandoniand now applies the powder directly to results. The article is illustrated.

Methyl Alcohol Ambly

NAGEL, C. S. G., San Francisco (Jo 18), believes that wood alcohol amblyou a defective local blood supply consequithe general circulation. The first symtto what Von Graefe has described as isc it would be of great interest if contracti could be ophthalmoscopically demonstra The later eventual attack of grave amb to the later cumulative action of the i He has had the opportunity to follow a case included in Buller and Wood's Oct. 1-29, 1904), and gives the history From his observation of the case, he had a simple glaucoma had developed. incipient cases is so bad, he would ador at least keratomy, to lower the inti asks whether so-called simple glaucoma sometimes under normal intraocular pre or lamina cribrosa has lessened resiste thinks, would help to clear up the vexthe therapeutic effect of operative meas plex.

The Ocular Origin of M

GOULD, GEORGE M., Philadelphia (J. 28), notes the confusion that exists in tion of migrain in the literature and the neurologists and others who have

as its general prevailing cause. Of all atypical diseases, he says, migrain is, by all odds the leader. This is, first, because its cause, evestrain, is of a thousand different kinds and intensities, and second, because vision is so bound up in some way with almost every physiologic activity, every psychic and bodily function, that the symptoms produced by its derangement are most multiform. The infinitely varied morbid cause or seed is planted in an infinitely varied soil. He gives the history of the evestrain theory of its causation, and quotes from a large number of writers who have reported cures of the condition by correction of ocular defects by proper fitting of glasses. He says, "I could give the details of perhaps a thousand cases of 'migrain' or sick headache cured by glasses. I should say that 90 per cent, of cases are immediately curable, and a large proportion of the rest curable in time. and as soon as the secondary systemic functional effects have been overcome. A few cases are incurable, because these secondary effects have become organic or too chronic to allow any cure. There are also rare cases in which mental reaction has become impossible."

ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

RV

WILLIAM T. SHOEMAKER, M. D.,

PHILADELPHIA.

AND

CLARENCE LOEB, M. D.,

ST. LOUIS.

The Treatment of Suppuratio Bulbi Arising in the Scar Following an Incision.

HIRSCHBERG, J. (Centralbl. f. prakt. Aug., July, 1905) calls atention to the fact that an eye which has been healed can be reinfected by way of the scar and can be destroyed in consequence thereof. He advises extensive cauterization with the electrocautery, and reports two cases successfully treated. C. L.

A Slight Change in the Cutaneous Incision in the Temporary Re-Angioma of the Chorioid.

FEHR (Centralbl. f prakt. Aug., June, 1905) reports a case of this rare condition. Angioma of the eye may affect the bulbus, lids, appendages or orbit. Only twenty-five cases of angioma of the chorioid have been reported. Their general characteristics are as follows:

They are always congenital, and are usually combined with naevi vasculosi facies.

The first symptom is visual disturbance, which remains stationary for years and then becomes more or less pronounced owing to detachment of the retina and cataracts. This is finally followed by iridocyclitis or glaucoma, leading to enucleation.

The tumor involves all the layers of the chorioid or simply the chorioidea, and with one exception, in literature, has always been a cavernous angioma.

The author's case was seen first in 1885. There was found at that time a tumefaction in the center of the fundus of a greywhite color. It was apparently composed of white and grey

nodules, which gave it a stippled appearance. It was surrounded by a pigment ring. There was a slight detachment of the retina between nerve and tumor, also a distinct detachment in the inferior periphery. The diagnosis of benign (fibromatous) tumor of chorioid was made.

The tumor gradually increased in size with stationary visual acuity. In 1896 there was a sudden decrease in vision, caused by an increase in the detached area of the retina, with hemorrhages. The sight was finally lost, but there were no symptoms of irritation until Sept. 12, 1904, when the patient suddenly experienced great pain in his eye and head, with irritation of the eye, and increase of tension and cloudiness of the cornea.

The eye was enucleated one month later. Examination showed that the lens was clouded. The retina was detached in the form of a funnel and divided into several membranes and strands, which were joined together by a reticular membrane which traversed the vitreal chamber and adhered to the chorioid. There was found a flat tumor covering the chorioid, which, on section, was seen to be a spindle shaped swelling of the chorioid of blood red color. It began near the nerve and extended outward 12 mm., was 6 mm, high and 3 mm, thick.

The tumor was a pure cavernous angioma and consisted of a meshwork of thin connective tissue enclosing a system of spaces filled with blood, involving all layers of the chorioid. The transition from tumor to chorioid is quite abrupt, being preceded by a stasis of blood. The tumor is covered by a dense fibrous shell, which becomes bone as it approaches the nerve. The rest of the chorioid shows atrophy, small cell filtration, numerous glands and vesicles.

The retina is greatly degenerated, as is always found in detachments of long standing. The disc is excavated. In sclera and episclera are foci of round cell filtration.

The author calls attention to the ophthalmoscopic picture and refers to different conditions from which it must be diagnosed. He refers to another case where he made the tentative diagnosis of angioma.

C. L.

Violet Vision.

HILBERT, RICHARD, Sensburg (Centralbl. f. prakt. Aug., May, 1905) reviews the five cases found in literture and reports an additional one. His patient was 50 years old, was badly nourished and, in addition, was a neurasthenic. He was suddenly taken sick with chill, bronchial catarrh and tonsillitis, headache and neuralgic pains in arms and legs. On the fourth day the headache disappeared and the patient com-

plained that every clear object seemed violet, and when his eyes were closed the whole field of vision had a violet color. The patient's condition did not permit a closer examination. This symptom disappeared in thirty-six hours with the use of salipyrin and psychic influences, and the patient was entirely well in four weeks.

C. L.

Section of the External Orbital Wall in Kroenlein's Operation.

PIHL. ALBIN (Centralbl. f. prakt. Aug., June, 1905) reports two cases where it was necessary to introduce a modification of Kroenlein's operation. The incision consisted of two parts: an orbital one, which began in the external one-third of the eyebrow and extended in a curved line, concave, downward and inward, over the external bony edge of the orbit to the niveau of the zygoma; the temporal part commences at the end of this incision, runs outward almost at a right angle and follows the upper edge of the zygoma for 2 to 3 cm. Otherwise the technic is the same.

The advantages are better access to large tumors, or those lying in the median part of the orbit, the possibility of extending the incision as much as desired in the eyebrows, and the better cosmetic results.

C. L.

Anilin Dyes.

3/4

Vogr. (Ref. from Wochenschrift fuer Therapic und Hygiene des Auges, May 11, 1905) found experimentally the effect of anilin dyes upon the eye varied according to their chemical composition. The acid, neutral and corrosive, as well as the insoluble dyes, placed in the conjunctival sac of the rabbit (5 — 10mg.) produced little or no irritation. The same quantity of basic dye on the other hand caused great inflammatory reaction, resulting even in panophthalmitis. The less soluble the basic anilin, the less poisonous it was.

Solution of tannin in 5 to 10 per cent. strength neutralized the irritating properties in 11 cases. Water, salt solution, boracic acid, sublimat, and sodium bicarbonate seemed to increase the poisonous action. All cases so treated became worse.

W. T. S.

The Action of Arsenic Upon the Blood.

BIERNACKI, E. (Wiener Medizin, Wochenschrift, 1904, No. 25-27, Ref. from Wochenschrift fuer Therapie and Hygiene des Auges, May 18, 1905) believes that the majority of cases in general practice, diagnosed as anemia, show no anemic changes in the blood, but on the contrary show sometimes

upon investigation, an "over normal" blood or hyperglobulie. In these cases of pseudo-anemia, arsenic gives good results and iron fails.

Biernacki treated fifteen such cases with arsenic, and made careful examinations of the blood. His results showed a reduction in the cellular elements, and the production of a true hydremia. Arsenic, he says, has the great exact opposite effect of iron.

The favorable action of arsenic in these cases of pseudoanemia, is due to the reduction of the hyperglobulie. In true anemias, therefore, no blood producing action is to be expected from the use of arsenic. W. T. S.

Two Cases of Bilateral Exophthalmos and One Case of Chorea Cured by the Removal of Adenoid Vegetations.

Holz, B., (Ref. from Wochenschrift fuer Therapie and Hygiene des Auges, May 18, 1905). These cases were children about seven years old. The first had bilateral exophthalmos with adenoids. Ten days after removal of the adenoids the exophthalmos disappeared. Two years later there was a return of both adenoids and exophthalmos. Permanent cure followed radical removal of the pharyngeal tonsil. The second case had hyperplasia of the palatal and pharyngeal tonsils. Removal first of the palatal growths had no influence upon the exophthalmos. Fourteen days after removal of the pharyngeal tonsils, the exophthalmos permanently disappeared. The third case was one of chorea, which was cured by the removal of adenoid vegetations. Holz draws the following conclusions:

1st—Exophthalmos when not due to mechanical cause within the orbit, even if the only symptom justifies the diagnosis of Basedow's disease.

2nd—Basedow's disease, in all its different varieties is a disease of the central nervous system, characterized by abnormal internal secretion.

3rd—Basedow's disease, epilepsy and chorea can be produced by adenoid vegetations.

4th—Basedow's disease, epilepsy and chorea can be cured by the removal of adenoid vegetations. W. T. S.

The Etiology of Syphilis.

SIEGEL, (Wochenschrift fuer Therapie und Hygiene des Auges, May 18, 1905) has investigated the etiology of smallpox, foot and mouth disease, and syphilis. His results upon the latter disease are contained in the following theses:

1st—In the blood of a syphilitic not under treatment, in the

primary lesion, and in the broad condy tozoa, which belong to the family of a 2nd—The parasites in the skin are tissue, and in the blood vessels, in c exanthemata, in which they are found 3rd—In inoculated rabbits, disease produced in which are found the same man

Flimmer-Scotom.

REUS. V., (Wiener Ophthalmologis from Wochenschrift fuer Therapie an June 1, 1905). In 1876 V. Reuss made flimmer-scotom, and recognized four tv 1st—A flimmering mist, partially t opaque, covering the entire field, withou tion at the periphery, and having the 2nd—At a point near the center of the or scotoma, surrounded by a zig-zag li which has a lively flimmering move forms a closed circle, or is open towar nomenon disappears at the periphery w ment of the light area. This change in or slowly. 3rd-Light or dark flimn the field with or without sharp boundar. boundaries. They disappear quickly of terially increasing in size. 4th—There opsia without flimmering, and without

Several types can appear in the same later investigations contribute nothing tomatology, but deal more with the enomena. He has had the opportunity scotoma upon himself. He suffered at quent type (2-with slow disappearancured several times a year, were of altion, and were never accompanied with discomfort.

Of etiological moment, he noticed the when he was tired, and was working a objects. As they could not be voluntar ered that he had at the time an unknow tion to them. He did not see light z zig-zag lines, upon a bright yellow group of the second s

Above and to one side of fixation, was scotoma which seemed to have no relati

Viewed through a colored glass against the sky, the zig-zag lines appeared in the complementary color.

Reuss tried to determine if pressure phosphenes, voluntarily produced in colored light were seen in complementary color, but his results were negative. He concludes, however, that under such circumstances, they are undoubtedly of complementary color, but that they are much more difficult to so recognize than in flimmering-scotom.

W. T. S.

Elastic Fibres in the Sciera of Myopic Eyes.

ELSCHNIG, (Wiener Ophthalmologische Gesellschaft. Ref. from Wochenschrift fuer Therapie und Hygiene des Auges, June 1, 1905). Lange (Graefe's Archiv. L.X.-1.) from an examination of a few slightly myopic eyes in comparison with that of emmetropic eyes, advanced the hypothesis that myopia was caused by a congenital failure of elastic fibres in the sclera.

Elschnig examined histologically twenty eyes with myopia ranging from 2 to over 30 D., two eyes with high grade myopia of unknown refraction, and seven eyes with coloboma of optic nerve, and irregular staphylomata. For comparison he examined 20 emmetropic and hypermetropic eyes.

The sclera of the normal eyes showed frequently, only in certain parts a well marked lamellar structure, with generally a regularly woven like arrangement of the connective tissue bundles. Only in the latter cases are the elastic fibres, by casual examination, rich in number. With the lamellar structure they are at first apparently very sparse, but by special illumination can be seen in great numbers. The sclera of the myopic eye is very frequently of lamellar structure. At first sight it is easy to be deceived into thinking that the sclera contains but little elastic tissue. By careful examination. however. Elschnig has demonstrated that elastic fibres are plentiful in the sclera of myopic eyes, and are found in all parts. even in those which have become thinnest. Even around the optic nerve, where normally the number and thickness of the elastic fibres are greatest, so in the myopic eye, when the sclera has become very thin and distorted, Elschnig has found them quite as numerous and thick as in the normal eve.

Lange's hypothesis is therefore untenable. W. T. S.

The Simplest Glaucoma Operation.

HABERKAMP, (Die Ophthalmologische Klinik, May 5, 1905). The operation described by Haberkamp consists in paracentesis of the anterior chamber by means of the galvano-

cautery. It requires little preparation the office. The wound remains open for ing which time the circulatory disturbation better aljust themselves to equilibrium paracentesis is made with a knife and the

Two cases are reported so operated cellent results.

The Cosmetic Advantages of the Radium '' ... with the Method of Appli

KIRCHMER, (The Ophthalmologische Gilbert and Gueriteau reported in I Klinik, No. VI, 1905, a case of inopelacrimal sac treated by the Roentgen relent cosmetic result was obtained, but opainful Roentgen dermatitis had been thors say that improvement first commerchave produced a burn, and often quite

The frequency of severe and trouble deters many ophthalmologists from using Kircher contends that results equally from the use of radium rays, and with eve and its surroundings.

An illustrative case of cancroid at the cited. The tumor was 17 mm, long a involved the entire thickness of the lidebromid, capable of raying a surface 3 mm at intervals of two or three days, each portion of the tumor. The application 15 to 20, and at most 25 minutes. As every portion of the tumor had been a rays. There was at this time a slight no marked improvement otherwise. The continued for three weeks, and then redays, and again discontinued. Two whad entirely disappeared. As to the metallowing observations are made:

For therapeutic purposes, it is important preparation of the greatest possible act salt emits uninterruptedly heat and lighthere are three known and distinct kind been named A, B, and C, rays. They a cipally by their different powers of per are stopped by a single sheet of paper; trate light substances such as paper, wo in part glass and thin metal foil. The

ped by a coin. The C-rays penetrate everything, even thick lead plates, but constitute but a minimum portion of all of the rays. The physical and chemical properties of these three rays are collectively termed "radio-activity."

When radium is treated or dissolved in water, a gas is generated which remains for a long time radio-active, and coats objects with which it comes in contact, making them also radio-active. When looked at in the dark, a weak sea-green shimmer is seen, even through the closed lids or interposed objects. Objects, however, are never seen by this light, because the rays are not refrangible, and can form no picture upon the retina. The hopes excited in the blind by the publications some time ago of London's investigations are entirely without foundation.

Care should be taken to determine the proper time exposure, and intensity of the rays necessary to cause a disappearance of the pathological tissue. The surrounding normal cells are less sensitive to radio-activity than are pathological cells, and are not seriously disturbed. The death of the cells is not caused directly by the rays, but occurs secondarily. The use of the rays for too long a time can cause very thick and undesirable scars. It is possible that these scars can protect the underlying cells from further action of the rays, and that the cells subsequently can grow again.

Kirchner believes that the harmlessness of his method of using the radium rays is due to the relatively short exposure. A careful ophthalmoscopic examination is to be made before radium treatment. In one case Kirchner found incipient cataract peripherally, and told the patient that he was likely to develop cataract; the cataract in that eye did not, however, develop more rapidly than the one in the fellow eye.

Kirchner concludes that in radium, we have a means of rapidly and without danger, and in ambulatory patients, influencing lid tumors, especially the rodent ulcer. He lays great stress on the fact that cosmetic results can be obtained by the radium treatment, often quite unobtainable by surgical methods.

W. T. S.

The Therapeutic Use of Radium.

DARIER. (Die Ophthalmologische Klinik. May 20, 1905). Radium of high activity, at least 100,000 radio-activity, exerts a destructive local corosive action, which appears later, the shorter the time of exposure. The strength of action depends much upon the substance used as a container, and its transmissibility for the rays. Such containers are made of glass, lead, celluloid, etc. A radio-activity of 300,000 can

if the containers be of india-rubber, p action upon the skin.

The cells first affected are those v erate, such as epithelial cells, the endo sels, other endothelial cells and especi

Such action finds favorable applic of small skin tumors. Radio-activity produces in small animals, probably f the vessel endothelium, effects upon tem, paralytic in character.

Bohn and Danya have found anat posed to radium rays, rents in the bl tive hemorrhages in the brain and co and action upon the peipheral nerve an important role when radium rays sions. Darier has observed analgesic radium. Young cells, and especially the before healthy and well organized times.

Certain insects, or larvae are killed development arrested, while others un over developed. In man, no case of radium has as yet been observed.

Darier has used radium in cases rhage, headache, neuralgia, facial pa ocular muscles, tabes dorsalis, etc., dium, he thinks, has the power of in sensory nerves, so long as their functed. It can exert no influence in case analgesic properties of radium were by Darier while treating a case of rl They are unfortunately not certain many cases fail.

Foveau reports a case of trigemin fully operated upon by stretching an permanently cured by the application tivity for four days. Also a case of with a tube of radium, which remain pain.

Darier attempted to relieve the la motor ataxia by radium, and had pa Raymond, following Darier's sugges tabetic patients with radium, and obt as astounding results.

The Pupillary Disturbances in Mental and Nervous Diseases.

(Review from Die Ophthalmologische Klinik, July 20, 1905). In the general part of this book is given a review of the physiology and general pathology of pupillary reaction. The special part is devoted to a consideration of the pupil in diseases of the central nervous system.

Tabes Dorsalis. Miosis without reflex action, which is very rare in tabes dorsalis. Brinke explains as due rather to a relatively diminished inhibitory action over the sphincter than to a lessened sympathetic tonus. If there is also loss of light reflex action, there is a tonic spasm of the sphincter, in the nature of a secondary contraction.

Dementia Paralytica. The most frequent pupillary phenomenon in this disease, and the one of most diagnostic importance is loss of reflex action to light. Bumke's average statistics are, complete loss of light reflex, 45.4 per cent: slow reaction to light, 28.3 per cent; and good light reaction. 26.3 per cent: other ocular phenomena are, ophthalmoplegia internum, dilation of pupils following sensory stimulation. and inequality of the two pupils.

Syphilis of the Central Nervous System. All of the previously mentioned pupillary phenomena occur in syphilis, but Bumke considers them in syphilitic subjects, prognostically as regards paresis and tabes, more favorable, the more atypical

they are for these diseases.

In central syphilis, in contra-distinction to tabes and paresis, the reflex inaction of the pupil is generally associated with paralysis of one or another of the external ocular muscles, or the pupillary symptoms are generally the beginning or the termination of a complete oculo-motor paralysis.

Senile Dementia. Arterio-Sclerosis. of the Brain. pupillary phenomena in senile dementia do not differ greatly in quality from those regularly found in physiological senility. The pupils are small, and react slowly to light convergence. In general, arterio-sclerotic changes in the brain show no predilection for the pupillary reflex centres.

Multiple Sclerosis. From the observations of numerous authors. Bumke concludes that there are no characteristic pupillary phenomena in multiple sclerosis. Only in connection with other ocular symptoms are they of value in differential diagnosis.

Syringomyelia, Miosis from sympathetic paralysis, which occurs with relative frequency is the only pupillary symptom

in syringomyelia.

Tumors of the Central Nervous System. Bumke believes that pupillary signs in brain tumor are of little value. The most frequent change is inequality, v istic and uncertain symptom.

Primary Degeneration of the Motor ly reacting pupils observed by difference ive muscular atrophy (spinal), are the system diseases of the cord.

Encephalitis, Polionencephalitis, M. In all of these inflammatory disease pupillary disturbances are rarely four

Meningitis. Whether or not put found in this disease depends upon tissue irritated in the process.

Toxic Diseases of the Nervous Simost frequent innervation disturbance ism is marked sluggishness of reflex complete inaction.

Opium; Morphinism; Bromism. of opium and morphin are miosis at mides produce mydriasis.

Functional Diseases of the Ner: Bunke, from a special study of the attacks, concludes that the innervational pils in this disease are much more engenerally supposed.

Hysteria. The pupillary symptoms follows: The pupils can be widely tracted. Light reaction is at the sapupillary inaction in hysteria is due to iris itself. The stimulus which normation is ineffective. The reflex disturbed the Argyll Robertson character.

Neurasthenia. The pupillary symmal dilatation and inequality, sympto in those of good health.

Functional Psychoses. Dementia the average pupils abnormally wide. results as to reflex inaction. He coloss of psychic reflex, pupillary unr dilatation from sensory irritation.

Imbicility. The psychic reflex is f flex dilatation from painful stimuli is

Trauma and Pupillary Disturbance cases reported in which following a was complete fixity and inequality muscle paralysis.

is the Müller Formative Prothesis Without Danger?

ULBRICH. (Die Ophthalmologische Klinik. Aug. 5, 1905). Mueller has devised a prothesis to be inserted into the conjunctival sac immediately after enucleation. The prothesis is a hollow body made of glass and so constructed as to conform to the conjunctival sac. In the middle is a sagittal canal to give exit to the secretion. The object is to prevent too great a shrinking and contraction of the conjunctival sac.

Ulbrich reports a case of sarcoma of the ciliary body in which immediately after enucleation the prothesis was inserted. General infection, manifesting itself in the joints, and many of the internal organs, followed, terminating the case in death. He considers the use of the prothesis as the probable cause for the subsequent infection. The prothesis acted as a foreign body in the conjunctival sac and kept open Tenon's space, thus favoring the propagation and distribution of bacteria. Ulbrich recommends closure of the conjunctival sac and Tenon's space with stitches in any case in which Mueller's prothesis is to be used.

W. T. S.

Entoptic Perception of the Retinal Circulation and Its Significance in the Study of Visual Hallucinations.

Pick, (Wiener Klinische Wochenschrift, Feb. 15, 1905). The first to associate the entoptic perception of the retinal circulation with the visual halluncinations of delerium tremens was Skoda. He thought, as did Meynert, that the pictures of little moving animals depended upon the movement of the blood in the retina, which produced scotomata that were thus mistaken.

Later Exner in discussion of one of Meynert's contributions, concluded that animal hallucinations were due to the consciousness of entoptic circulatory phenomena, and spoke more particularly of the form of these entoptic phenomena. If one looks at a uniformly illuminated surface, he will at first see in the neighborhood of fixation, and later over the entire field, snadowlike flecks, that usually quickly recede and disappear.

These little objects can be seen in great numbers, filling the entire field, and having the appearance of a swarm of ants. This is supposed to be due to the corpuscles, or isolated portions of the blood corpuscle mass becoming visible through the capillary net work.

Helmholtz, in his book on Physiology, says that he is convinced that entoptic phenomena are due to blood movements. A single large blood corpuscle obstructs a small capillary. The vessel then becomes distally, relatively empty, and proximally

congested. The obstruction is brok mass of corpuscles moves rapidly o sponds to the empty portion of the shadow to the accumulated mass constudied this phenomenon in his own

Pick discusses the well known ap nomena in eyes blind from optic atroseem to discount the blood circulatic however, that even in eyes which ar ception blind, there are still a few ne undergone complete atrophy, and witionating sufficiently to permit of the A case with visual hallucinations is a bases his observations.

The Etiology of Pinguecula

SACHSALBER, (Wiener Klinische 1905). It is a well known fact that cesses are especially found localized it rise to more or less severe secondar must be considered pinguecula and

The pathological anatomy, etiolopterygium have been much studied in the weakest point still remains, the end most other authors recognize and tween pterygium and pinguecula, and can directly proceed from the latter.

This would seem probable for among which is the fact that in all c development of ptervgium, pinguecu underwent a regular enlargement, an a direct transition to ptervgium. her. Fuchs and Alt do not however velopment the only one. More recei strated an indirect relationship betwe gium, but regards it as questionable immediate or direct one. The latter the fact that direct transition from can be frequently observed clinically. rect conection lies in the fact that as the pinguecula at first having increa pletely disappears. The disappeara the development of ptervgium is co istic. Again, pinguecula is almost w both eyes, and when in such a case p eye and the pinguecula disappears from that eye, Sachsalber considers it a speaking proof for the development of the former from the latter.

The age of the patient is of moment in the etiology of pterygium in its relation to pinguecula. Pinguecula is as a rule observed only after the third decade, and from then on to 50 years is most frequently found; spontaneous disappearance never occurs, and as age advances, it becomes larger and more noticeable. Pterygium generally makes its appearance after the fortieth year.

Typical ptervgium is found among the inhabitants of torrid zones, and those traversing the sea. Lopez found that more than half of the inhabitants of Cuba have pterveium, and Sachsalber seeks to determine if the diverse external agencies such as dust, smoke, wind, sunlight, great heat, etc., are really sufficient to cause pinguecula and later ptervgium. Certainly pinguecula and ptervgium are not worse in the summer months, but ptervgium progresses more rapidly at that season of the year when light is least strong, but when the weather conditions are most favorable for chronic conjunctivitis and larcrimal troubles. Kreibich and Dimmer have demonstrated beyond doubt the influence of light upon Spring Catarrh, especially the bulbar form. But as Spring Catarrh is a disease of vouth and ptervgium a disease of later life, there is probably quite a difference in the etiology. That the same influence will not produce ptervgium in all individuals is evidence that we have also to deal with a certain disposition or susceptibility to the affection. The individual disposition is seen principally in an inclination toward certain diseased processes which appear with increasing age. Fuchs calls these processes collectively "senile changes." The anatomical changes of pterygium have a strong resemblance to the typical senile changes found in the cornea, known as areus senilis.

Huebner considers only external influences as factors in the production of pterygium. He considers the change from pinguecula to pterygium a direct one, brought about by the impaction of a foreign body in the form of dust or sand in the pinguecula near the cornea. A loss of tissue in the cornea is thus produced, into which the conjunctiva is actively or passively pushed and the pterygium started.

Concerning the anatomy of pinguecula. Fuchs in his very complete essay on this subject says: The pinguecula consists of a thickening of the conjunctiva in which there has been a hyalin degeneration of the tissue elements, and a deposit of free hyalin material. Another important change is a great increase in the number and size of the elastic

fibres. Huebner attributes the yellow color of pinguecula to these elastic fibres.

Pterygium has also been extensively studied by Fuchs, who found that it consisted of conjunctiva the same in character as the bulbar conjunctiva; that the epithelium was of the conjunctival kind, but showed signs of proliferation, causing many folds and leading to the development of glands. The stroma of pterygium is similar to that of conjunctiva; is rather rich in blood vessels, and contains a great deal of wavy connective tissue. Elastic fibres are found, and numerous little pieces owe their existence to the original pinguecula. The adherence to the cornea is very intimate, but not so extensive in area as it appears to be clinically. Another change is the new formation of connective tissue which Fuchs says may be considered as subepithelial scar tissue.

A characteristic change found in pterygium is an angular conjunctivitis which shows at longer or shorter intervals, an increase in inflammatory activity. Sachsalber has noticed in a number of cases of pinguecula with angular conjunctivitis, very constant changes in the fine hairs or lanugo around the inner canthus. These little hairs protect the eye, but at the same time, in that they have their free ends dipping into the lacrimal lake may be a constant source of irritation. This irritation is greatly increased by forcibly closing the lids, and thus causing a greater projection of the hairs against the conjunctiva. This lid closure occurs in the presence of external irritants. A detailed study of the anomalous arrangements of these hairs is given, and six case histories cited upon which Sachsalber's observations are based.

WTS

The Present Status of the Nutrition and Nutritional Disturbances of the Lens.

ZIRM, (Wiener Klinische Wochenschrift, March 23, 1905). That cataract was a disease of the crystalline lens was demonstrated by Brisseau in 1705. Prior to this it was regarded as a newly developed membrane in the pupil. The lens which is developed from the ectoderm of the secondary optic vesicle is, during embryonal life surrounded by a network of blood vessels. From the time of birth on, it has neither blood vessels nor nerves. Its posterior surface rests in the partellar fossa of the vitreous, and its anterior surface is bathed in the aqueous humor. It is contained within the capsule which has upon the inner surface of its anterior portion a single layer of epithelial cells.

The lens substance proper consists of long six sided prisms extending from pole to pole, and as no blood vessels are present, they are nourishel by osmosis from the surrounding ocular fluids. They require, however, but little nourishment. The weight of the lens increases according to Leber 30 per cent. from the time of bodily maturity until old age. While other epithelial structures are constantly and regularly throwing particles off from their outer layers, this in the lens is impossible on account of the completely closed capsule.

For the maintenance of the lens-transparency it is necessary that the surrounding fluids do not undergo chemical changes and changes in concentration, and also that they remain free from substances which act injuriously upon the lens. The lens capsule contains no physical pores, so that fluid changes must take place by endosmosis. Certain substances such as albumin and salt solution can readily and quickly pass in this way through the capsule in either direction. The endosmosis from the vitreous is through the posterior capsule, but more important is that from the aqueous as it trickles from the adjacent ciliary processes, around the equator of the lens where the fibres are generated.

Deutschmann placed extracted lenses from animals in salt solutions of different concentration, and found that when in saturated salt solution the lenses lost in weight and volume from loss of water, and in weaked solutions increased in weight and volume from taking in water. In both cases the lenses became cloudy.

The human lens acted the same way after death. Albumin and salt were thrown into the aqueous, which in 48 hours increased in specific gravity to almost double. Why does not this occur in the living subject? Because the living lens possesses in its uninjured capsule with its cells a protecting organ which *limits* osmotic action. This protecting influence ceases as soon as the capsule epithelium is markedly changed or the capsule is broken. The latter condition is seen in traumatic cataract. An example of cataract formation through a capsule, which is intact, but having its epithelium changed or injured, is seen in lens massage as practiced by Foerster's method of artificial ripening. Labor demonstrated in this connection tearing and folding of the epithelium beneath the intact capsule, thus allowing the aqueous to enter.

Kunde, experimenting with frogs, placed large quantities of sodium chlorid or sugar in the stomach or under the skin, and kept them out of the water. The lens became cloudy, but immediately cleared when the frogs were returned to the water. Heubel produced cataract in rabbits by placing pow-

dered substances in the conjunctival sac. The lenses became again clear in a few hours. He proved that the substances really entered the lens by coloring them. The explanation lies in the fact that fluids of the eye became more concentrated and the lens lost water and took in salt and sugar.

Diabetic cataract would from this seem to be due to the loss of water, in consequence of the sugar contained in the aqueous humor, but Deutschmann has demonstrated that such is not the case. Such cataract can only be produced experimentally when the aqueous contains a very high percentage of sugar (5 per cent.), which is never found in the living subject. Deutschmann found in an 11-year-old girl with (8 per cent.) sugar in the urine, immediately after death, only (5 per cent.) in the aqueous and (.36 per cent.) in the vitreous, and the lenses which were perfectly clear were sugar free.

It is likewise impossible even by the introduction into the system of enormous quantities of sugar, to increase the sugar in the aqueous to any great extent. Although the exact cause of diabetic cataract is not known at the present time, it is not due to sugar in the blood, in the aqueous humor, or in the lens.

Bouchard and Charrin have discovered that napthalin introduced into the stomach of rabbits produces, besides degenerative changes in other organs, cloudiness of the crystalline lens, and degenerative changes in the retina and other portions of the eve. The cataract is not secondary to the other changes, but frequently is the first symptom of the poisoning. Peters has found the salt percentage in the aqueous of eyes with naphthalin cataract increased, which he considers the cause of the cataract. The lens loses water, diminishes in volume, and takes in salt. Then there is folding of the capsule, proliferation of the epithelium, and nutritional disturbances affecting the lens cortex which leads at once to cataract. Peters also noticed changes in the ebithelium of the ciliary processes, leading to alterations in their secretion, and concludes that the cause of the cataract is the altered agueous, and not the naphthalin directly. changes in the ciliary epithelium have been found by Helbron, and by Van Genuns in cataract produced by ligation of the vorticose veins, by Kiribuchi, in cataract from electrical injury, and by Kamocki in the diabetic cataract.

Peters and his pupil Sala have also found these changes in senile cataract, and in cataract from ergot. Peters therefore believes that in this cycle, ending in change of the ciliary epithelium and therefore altered aqueous secretion, is to be found the explanation for most of the varieties of cataract formation

Opposed to Peters' theory is Salffner, who has made a very careful study of naphthalin cataract. He found that without exception in animals fed on naphthalin, there was first an *increase* in the weight and volume of the lens. The increased concentration of the aqueous, he believes, is not enough to account for the subsequent changes, and holds that the cause of the cataract is an injury to the function of the capsule by which too much fluid is allowed to pass into the lens. Changes in the capsule epithelium in naphthalin cataract have been described by Hess, and demonstrated by Salffner.

In support of this theory are also the views of Ulrys, who 'believes that in naphthalin poisoning the same substances which cause degenerative changes in the internal organs, also attack in like manner the retina, vitreous and lens.

Experimentally, on extracted animal lenses, great reduction or great increase in temperature causes cataract. Under the latter heading is discussed the cataract of glass blowers. Hess found in these cases that the epithelial cells of the capsule were degenerated, on account of which the underlying cortex suffered in nutrition. Leber ascribes the cause to concentration of the aqueous following continued exposure to high temperature and profuse perspiration. Wolffberg has recently applied this principle for the artificial ripening of cataract, by the application of hot air. Leber thinks that the cataract in this case is not produced by the heat, but by chemical rays, the ultra-violet.

In senile cataract the lons nucleus becomes sclerosed, and if any considerable part of the lens is affected, the anterior and posterior surfaces become flattened, on account of the shrinking, and contraction toward the center. At the equator where the lens is supported by the zone of Zinn, the flattening cannot take place. There is then a loosening or separation of the lens fibers at the equator, with the formation of spaces which are filled with fluid, at first clear, and then cloudy. This zone of cloudiness at the equator has been called by Ammon, gerontoxon lentis.

This is not a cataract, but it stands on the boundary line between physiological and pathological conditions. There is scarcely an eye 70 years old which does not show it. If now there is added to this sclerosing process in the nucleus, the disposition to cataract, the changes then become pathological and cataract develops. Over half of the individuals who reach ages between 80 and 90 years develop cataract.

Nephritis has no demonstrable influence upon cataract;

senile cataract is not found more frequently among those with nephritis than among those with sound kidneys. Lens opacities are, furthermore, very seldom found in young persons with nephritis.

Of special interest is the cataract which develops at times in young subjects, the victims of different kinds of spasms and convulsions. Tetanus has been recognized as of etiological moment in the production of cataract, an important and not such a very rare phenomenon in this disease. Spasms of the eye muscles both external and internal are frequently associated with general convulsions. It is ciliary spasm which is the important factor in the causation of cataract in these cases.

Of the congenital cataracts the most important is the lamellar. Arlt at first associated this with convulsions, but Horner discovered a relationship between lamellar cataract and rachitis, and drawing an analogy between the lens opacity and the rachitic defects in the permanent teeth, based the etiology upon nutritional disturbance.

The cataracts following diseased processes in the eye such as chorioiditis, detached retina, posterior synechia, retinitis pigmentosa, tumors, cysticercus, glaucoma, etc., are due to direct disturbances in the lens nutrition, and usually commence in the posterior cortex. Cataract has been described as following scarlet fever (questionable connection) typhoid fever, malaria, leprosy, syphilis, and a number of other diseases. In conclusion Zirm says that practically, in so far as guarding against cataract, or curing it, even in the beginning, without operation, we can at the present time do nothing.

WTS

Rheumatism of the Eye Muscles.

PICHLER, KARL, (Wiener Klinische Wochenschrift, April 6, 1905), reports four cases of rheumatism affecting the external ocular muscles, occurring in the course of acute articular rheumatism. The contribution on this subject by Wright of Ohio is freely quoted and his views are largely concurred with.

Rheumatism attacks the tendons of the ocular muscles, causing quite extensive swelling, which is not however in the form of a single node or nodule, but is rather a raised, uneven flat swelling. The appearance resembles episcleritis or scleritis. Pain is usually not a very marked symptom, and on this account Pichler believes many cases, in the presence of the painful articular inflammation are overlooked. Rheumatism of

the ocular muscles, he thinks, is a more common affection than heretofore supposed. The condition yields promptly to antirheumatic treatment. W. T. S.

Bacteriological Examination of the Conjunctivitis of Measles.

Schottelius, (Klinische Monatsblaetter fuer Augenheilkunde, June, 1904). In 1901 Giarre and Picchi made bacteriological examination of the conjunctival and bronchial secretions from cases of measles, and isolated a slender bacillus which morphologically and biologically corresponds to Pfeiffer's influenza bacillus. Recently Morax found this bacillus in a case of "super-imposed conjunctivitis"; the conjunctivitis occurred as a complication in a well-marked case of measles in which at the commencement the eyes were perfectly normal. The same author found twice in similar cases the Koch-Weeks bacillus, and once the diplo-bacillus, as promotors of a severe secondary conjunctivitis.

Morax found that genuine conjunctivitis of measles, (a blepharo-conjunctivitis) 22 times in 26 cases of measles. In 12 cases the conjunctivitis appeared one to six days before, in 3 cases with, and in 7 cases one to three days after the eruption. In these cases Morax found bacteriologically only the "Saprophytes normal en sac conjunctival." The question whether measles conjunctivitis is a direct reaction of the conjunctiva to the measles virus, i. e. a toxic disease, or due to the presence in the conjunctival sac of the hypothetical specific organism i. c. an infection, Morax left open.

Schottelius examined bacteriologically the conjunctival secretion from 80 cases of measles, 40 of which were fatal, and arranges his findings in tabular form. Among the 40 not fatal cases, the staphylococcus aureus was found 25 times, or in 60 per cent. of the cases, and the streptococcus 6 times, or in 14 per cent. of the cases. The streptococcus was found only in the very severe cases, and seemed morphologically and biologically to belong to the group of "streptococcus septicus hominus."

In the fatal cases, the streptococcus was found 20 times or in 50 per cent., forming a striking contrast, and seeming to indicate a relationship between this organism and the severity of the disease.

Schottelius calls attention to the very frequent presence in these cases of the organisms which produce general wound infection, viz: the staphylococcus aureus, and the streptococcus, and advances the belief that the organisms are combined factors, and play an important role in the production of measles conjunctivitis, and even measles infection itself.

W. T. S.

Non-Pigmented Naevus of the Conjunctiva.

FOSTER. (Klinische Monatsblactter fuer Augenheilkunde, June, 1904), reviews thoroughly the literature relating to this rare condition and adds another case. Clinically, from his case he notes as characteristic the following points: A flat pale vellowish-red, smooth elevation in the conjunctiva near the corneal limbus. It possesses a broad base and is freely moveable over the underlying sclera. It resembles a pinguecula. It was present from earliest childhood, and upon the same side of the body were numerous small pigmented naevi, as well as a malformation of the auricle. Microscopically were found sub-epithelial collections, and nests of socalled naevus cells, and rich epithelial indentations, in part cystic. His conclusions are that non-pigmented cysts of the conjunctiva are found in the bulbar conjunctiva within the palpebral fissure. In form they are flat, vellowish-red tumors, with a tendency to increase in size, but with no tendency so far as yet noted to become malignant.

Histologically, they are analogous to pigmented cysts, but without pigment, and frequently develop into multiple cysts from the ingrowing of epithelium. The dermoepithelioma, or congenital cystic epithelioma described in literature, is clinically and histologically very similar to the non-pigmented conjunctival cyst.

Foster's investigations seem to show that the naevus is not a purely epidermal structure, due to the ingrowth of epithelium, but that meso-dermal elements, and especially endothelium also take part in the process.

W. T. S.

The Armed Sound.

QUBIN, (Klinische Monatsblaetter fuer Augenheilkunde, June, 1904). The armed sound consists of a silver probe 8 to 10 cm. in length and .2 to .4 mm. in diameter, the end of which has been dipped into fused nitrate of silver, and dried in the air. Its advantages are that it can be accurately applied to inaccessible points, without disturbing other tissues not in need of cauterization, as is always the case when silver solution is used; its dosage is definite, and it is sterile. Qurin highly recommends this little device in the treatment of ulcerative blepharitis, fistulous tracts around the lids and lacrimal apparatus, chalazia after incision, etc. The method has been in use for many years in Pagenstecher's clinic, but Qurin finds no mention of it in ophthalmic literature. W. T. S.

Experimental Investigation of the Changes in the Lacrimal Gland After Extirpation of the Gland Ducts.

NATANSON, JR., (Klinische Monatsblactter fuer Augenheil-kunde, June, 1904). At the present time most authors agree that in the majority of cases after extirpation of the lacrimal sac, the secretion of tears becomes gradually lessened. One theory advanced in explanation, which, however, is not correct, is that extirpation of the sac causes an atrophy of the gland. Another theory is that in dacryocystitis the increased lacrimation is due to irritation from the diseased sac. When this sac is removed the gland returns to its normal physiological activity, providing just sufficient secretion to keep in proper condition the surface of the cornea. The latter theory is the one best grounded both anatomically and physiologically. It has long been known that extirpation of the lacrimal sac does not destroy the ability to cry, nor is it followed by atrophy of the gland.

In a few cases the flow of tears does not cease after extirpation of the sac. This is due to a continued conjunctivitis. and it is then best to remove the palpebral portion of the lacrimal gland. This operation was advanced and defended by DeWecker. DeWecker believed that when the palpebra! glands were removed the ducts of the orbital gland were necessarily destroyed, in consequence of which there was no further communication with the conjunctival sac, and the orbital gland atrophied. Schirmer demonstrated experimentally that the loss of lacrimal secretion was just as complete after removal of the palpebral glands as after extirpation of both palpebral and orbital glands. The effect upon the orbital gland produced by removal of the palpebral glands has a general pathological interest aside from an ophthalmological interest, because in many glands occlusion of the ducts causes a retention of secretion, which however does not follow in the case of the lacrimal gland. Ligation of the pancreatic ducts also results in degeneration without retention cyst formation. In this case, however, the pancreas undergoes a kind of self digestion. An interstitial pancreatitis is produced, and the overgrowth of interstitial tissue destroys the epithélium. Such a process in the lacrimal gland is of course not possible.

Natanson experimented upon dogs. Upon the presumption that the supposed atrophy of the orbital gland after extirpation of the palpebral glands was not caused by removal of the latter per se, but by the destruction of the ducts of the orbital glands, his operations consisted in the extirpation of these ducts, and destroying the connection between the orbital gland and the conjunctival sac.

The orbital gland was carefully removed and microscopically examined in one case two weeks after the first operation, in another four weeks, and in still another six weeks after the ducts had been removed.

Natanson found that the most marked changes were in the epithelium. The cells were reduced in size; the protoplasm was entirely gone and degenerated. In six weeks there was a well marked degeneration of epithelium, and the question is asked, if this degeneration is a primary change, or is it perhaps secondary to a primary proliferation of the interstitial tissue? Natanson believes that in this short time the interstitial changes cannot be very considerable, and that they must follow the epithelium changes.

W. T. S.

Uncommon Changes in the Deeper Layers of the Cornea in a Case Clinically Diagnosed as Parenchymatous Keratitis.

STANCULEANO. (Klinische Monatsblaetter fuer Augenheilkunde, Nov. 1904.) The author had the opportunity of examining post mortem a case of old parenchymatous keratitis. The anatomico-pathological examination revealed in both corneas a previous internal ulcer which had destroyed the deeper layers, while the superficial layers were but little injured, in the usual manner.

Ist—In the axis of each bulbus was "ulcus internum," caused by the destruction of the deeper corneal layers, and the tissue of the iris, which at these points was adherent. At the margin of the ulcer, Descemet's membrane was thrown into folds within the anterior chamber. In the left eye, at the outer margin of the ulcer, Descemet's membrane was for quite a distance absent. The presumption was that Descemet's membrane was at one point broken and thus became thrown into folds.

2nd—There were places where Descemet's membrane was gone, and the iris was adherent as anterior synechia, while the overlying corneal layers were normal.

3rd—The parenchyma of the cornea (mostly in the middle and anterior layers) was in places the seat of cell proliferation and vessel formation.

4th—Bowman's membrane was partially retained in the right eye, but in the left was almost completely destroyed by small cells. The epithelium in the right eye was almost normal, but a little thickened; in the left, it was more uneven and irregular. To explain these conditions, Stanculeano says it is necessary to consider the following points: Has the patient in early childhood had abcesses in both corneas which

perforated and produced keratocele? On account of the keratocele, did Descemet's membrane become stretched, then torn at some point and later cicatrized, and folded?

The lesions are not the ordinary ones of ulcus externum. They are more pronounced in the deeper layers; there are places where Descemet's membrane is absent, anterior synechia are formed, and the overlying cornea is normal. Perforation from ulcus externum, with prolapse of the iris. etc., would give quite a different condition.

Wintersteiner has reported cases of glioma retinae in which, during the glaucomatous stage Descemet's membrane, from stretching has broken. In the author's case, however, there was no factor of this kind.

Stanculeano believes that the hypothesis harmonizing most with the clinical side of the case is that the changes were due to the development of parenchymatous keratitis. W. T. S.

Detachment of the Vitreous.

Elschnig. (Klinische Monatsblactter fuer Augenheilkunde, December, 1904.) Detachment of the vitreous was first described by H. Mueller, and then more definitely studied from a large material by Iwanoff.

Iwanoff recognized two kinds of detachment: detachment immediately following perforation of the eyeball, due to a diminution in bulbar contents, and a gradual separation due to pathological changes in the membranes of the eye, causing changes in the vitreous itself. As an example of detachment sui generis, Iwanoff also described two cases he had seen in otherwise normal and uninjured myopic eyes.

Shortly before this, Arlt had published his studies upon myopic eyes of high degree, and had established the fact that in such eves the vitreous frequently becomes fluid. Iwanoff agrees with Arlt in his hypothesis that in myopic eyes, the vitreous did not increase in quantity in proportion to the increase in intra-ocular space, and therefore serous fluid entered between the vitreous and retina, and loosened the attachment between the two. This cause and effect explanation which Elschnig considers incorrect, soon found place in ophthalmic literature. The most important, and to-day generally recognized conclusion of Iwanoff was that vitreous detachment is in the majority of cases only a prodrome of retinal detachment, and that there is no doubt as to a close relationship existing between these two processes. So far as myopia is concerned. Elschnig refutes this conclusion of Iwanoff. Elschnig's investigations were upon myopic eves which he had carefully studied on thalmoscopically during life, made with a view to

determine more exactly the anatomical relationship and changes in the vitreous. Seventeen eyeballs with myopia ranging from 2 to over 30 D, and 5 with a typical myopic refraction were examined. The latter included staphyloma formation above, below, or in, and coloboma of the nerve. In 4 eyes only did he find a visible detachment of the vitreous. In the remaining eyes the topography of the vitreous was macroscopically and microscopically normal. These results coincide with Arlt's findings in myopic eyes which he carefully studied and recorded as having fluid vitreous. Arlt contended that fluid vitreous in high grade myopic eyes was essentially different from the vitreous detachment of Iwanoff, and protested against Iwanoff's claim that Arlt's fluid vitreous was detachment.

Elschnig calls special attention to the relation existing between the vitreous and the papilla, and the vitreous, and membrana limitans interna of the retina. The older the eye the nearer does the superficial layer of the vitreous body in the fundus become like that near the ora serrata. It becomes thicker and more like a limiting membrane, and separates more readily from the limitans interna of the retina. When stained with stains which set upon elastic fibres, it becomes darkly tinted but still not so much so as true elastic tissue. When the limiting membrane of the true vitreous stains deeply, the retinal limitans also gives the color reaction of elastic fibres, which is seldom the case in young eyes. At the papilla, the vitreous membrane is always poorly defined, or absent.

The contention that detachment of the vitreous frequently occurs in an eye with posterior staphyloma, is according to the studies of Elschnig, disproven. The author further concludes that there is no authority for the statement that vitreous detachment is a forerunner, or cause of retinal detachment, in the manner described by Iwanoff, and lays stress upon the fact that in myopic eyes with detached retina, detachment of the vitreous is not the rule. Following these conclusions based upon negative findings, Elschnig cites one case giving positive information of a most interesting character.

He had demonstrated to his students in ophthalmoscopy for about ten years a case diagnosed as retinitis pigmentosa with persistent hyaloid artery, in a man 47 years old. He could not himself accept the diagnosis of persistent hyaloid artery, and considered the tissue at the papilla, to be an acquired connective tissue formation, which is not so seldom found in cases of chorioiditis or myopia. Microscopic examination showed to his surprise a funnel-shaped detachment of the vitreous with the underlying space fitted with a turged serous fluid.

The supposed hyaloid artery or connective tissue strand was a strand of thickened vitreous attached to the papilla. The membrana limitans retinae was intact. Elschnig believes that many of the cases which are supposed to be persistent hyaloid artery are really cases of funnel shaped detachment of the vitreous.

W. T. S.

The Operation of Iridodesis.

SATTLER, (Klinische Monatsblaetter fuer Augenheilkunde, November, 1904). Iridodesis was first introduced into ophthalmic surgery by Critchett about fifty years ago, and the indication for the operation later were extended by Pagenstecher. It was most frequently practiced for central leucoma and lamellar cataract, and more rarely for keratoconus and ectopia lentis. Owing to the danger of the artificial iris prolapse at the corneo-scleral margin, and infectious irido-cyclitis, etc., the operation has been almost entirely abandoned.

Central leucoma, lameliar cataract and keratconus offer no indications at the present day for the operation, as better and safer procedures are in use. In cases of etopia lentis, however, the withdrawal of the iris from the aphakic portion, and the edge of the lens, will often present advantages not offered by other operations. A case of double ectopia lentis in a patient 15 years old in which iridodesis was practiced with good results is reported.

A fine silk thread was introduced through the conjunctiva and episcleral tissues at the limbus, forming a loop or snare. Incision was then made and the iris drawn into the loop, which was then tightened. Three weeks later the small prolapse was removed and Kuhnt's plastic operation was performed. (It will be remembered that iridodesis as an operation was abandoned, on account of the incurred danger of sympathetic opththalmia.)

W. T. S.

The Vitreous Body in Ocular Movements, and a Contribution to the Etiology of Retinal Detachment.

BEST. (Klinische Monatsblaetter fuer Augenheilkunde, December, 1904.) Imbert studied subjectively the movements of opacities in his own vitreous and concluded that such opacities lay behind, and close to the nodal point of the eye, or between the center of rotation and the nodal point. This conclusion as to the relatively central location in the vitreous of muscae voliantes is not in accord with the observations of others. Helmholtz in his 'Physiologischer Optik' says that many movable vitreous opacities lie very close to the retina and are seen

without any special effort, as for instance by simply looking at the sky. According to Donders and Doncan the majority of muscae volitantes are situated from ½ to 3mm. in front of the retina, and the extent of their movement is at least 1½mm. As to the kind of movement, Best finds that the ordinary muscae, which are easily perceived by daylight, remain practically stationary with slow ocular movements. When the eye is rapidly moved, in all directions, the opacities move in a corresponding direction for perhaps ½ second after the ocular movement ceases, and return within several seconds gradually to their original places. Movements upwards are more pronounced than those in other directions.

The muscae move with the vitreous in which they are suspended. The movement of the vitreous is greatest in that part immediately against the wall of the eyeball and becomes less toward the centre. By slow movement the movement of the vitreous against the wall and centrally is equalized, so that there is really little movement at ail. By rapid movement of the eyeball, from the impetus given, the peripheral vitreous continues in motion after the ocular movement ceases, and then there is a return to former equilibrium.

Muscae volitantes are more frequently observed by myopes because, first, the blurred and indistant pictures of the outside world render the shadows of the muscae more noticeable, and, second, the shadows on the retina of the myope are larger. Best's conclusions are that by every ocular movement there is a shifting of the vitreous followed by a return of this fluid to its original position. This shifting of the vitreous is greater at the periphery than near the centre. The return to the original position and relationship is due to the tenacity of the fine vitreous fibres. These fibres are much thicker in the peripheral vitreous, and the central vitreous contains a greater proportion of water. Peripherally, the vitreous is enveloped by the hyaloid membrane which lies next to the internal limiting membrane of the retina. The force of the motion of the vitreous is exerted most against the limiting membrane of the retina. Here as well as between the retina and its pigment epithelium are the places where the adhesion between tissue is physiologically the weakest, and therefore pathological separation, as detachment of the retina is favored.

Physiologically, the effect of the vitreous movement against the retina is inconsiderable. It is in a way counteracted by the pressure from within against the retina, and the intimate connection between the rods and cones and the pigment epithelium.

The case is different when the three underlying factors are changed, viz: the consistence of the vitreous, the integrity of the retina, and the cohesion between the retina and the pigment epithelium. And above all is the case different in altered and myopic eyes. Under these conditions Best believes that the constant irritation of the moving vitreous has more significance than shrinking of the vitreous as described by Leber and Nordonson.

The contraction theory for detachment, or shrinking of the vitreous is not altogether satisfactory as pointed out by Schweigger. He observes that freely moveable opacities found so frequently with detachment of the retina, even when they contract, cannot detach the retina; only a tissue stand with both ends fixed can by contraction separate the retina. Also in cases of fresh detachment, the vitreous is frequently perfectly clear and apparently normal. It is difficult to understand how such a vitreous could suddenly contract and separate the retina from the chorioid.

Idiopathic retinal detachment in the vast majority of cases starts above, and from what has been said, Best considers the vitreous movements, accentuated by the presence of small fixed vitreous opacities, to be an important factor in the causation.

W. T. S.

ABSTRACTS FROM FRENCH OPHTHALMOLOGICAL LITERATURE.

BY DAVID DEBECK, Sc. B., M. D.,

SEATTLE. WASHINGTON.

Alteration of the Corneal Curvature by Subconjunctival Injections, and Their Influence Upon Astigmatism.

Deschamps. Grenoble, (Soc. Franc. d'Ophtalmologic, May, 1905), reports the secondary results of these injections. Repeated subconjunctival injections produce an irritation of the episcleral tissue, which brings about an attachment between the conjunctiva and sclera. From this there ensues a shortening of the conjunctiva in the neighborhood of the corneal margin, and a tension upon the cornea. By this process its curvature may be decidedly altered. In one case, in which a row of injections had been made around the corneal margin in combating a sympathetic ophthalmia, there resulted a hypermetropia of 2.00 D. through flattening of the cornea. In another case, in which two injections had been made, at the two ends of the vertical meridian, there resulted an inverse astigmatism ("against the rule") of the 2.00 D. through flattening of the vertical meridian.

The observation of four cases had given very promising results. The injections must be repeated from 4 to 8 times at intervals of a week, according to the case. A few drops of salt-solution are injected close to the corneal margin between the limbus and the insertion of the muscle.

One can, by these means, bring about the disappearance of an astigmatism of nearly or quite 2.00 diopters.

This new method of treating astigmatism is certainly vastly preferable to any of the surgical methods, like cauterization, corneal incision, etc., that are occasionally attempted.

The injections may be employed in either regular or irregular astigmatism; and inserted according to the curve and the effect desired.

In the discussion, Darier reported that Senn had employed this method with good results in a case of keratoconus.

Radium in Ocular Therapy.

DARIER, Paris, (Soc. Franc. d'Ophthal., May, 1905), gives the results of some clinical observations. According to these, radium used locally seems to have a distinct influence upon the nervous elements. First: a soothing and anodyne effect; second: an inhibitory effect upon certain spasms and convulsive actions; third: a stimulating effect upon slight pareses of motor nerves. These observations, agreeing with numerous observers (Raymond, Zimmern, Rehns, Foreau de Courmelles. etc.) show that the radium rays have in general a regulatory influence upon nervous activity.

The cauterizing peculiarity of radium has already led to its local use in superficial epitheliomata, in lupus, trachoma, etc. Darier in addition recommends its trial in episcleritis, vernal catarrh, intra-ocular hemorrhages, etc. He had also secured promising results in retinal detachment and glaucoma. In eczema of the lids, a stubborn form of blepharitis and certain forms of keratitis, he had used a radio-active salve with good results. In subconjunctival injections he believes that a radio-active solution presents interesting indications.

Valude, in the above discussion refers to two cases of epithelioma of the lid margin (reported by him to the meeting of the previous year) in which the use of radium had not been followed by the hoped-for result. In a third case, now to be reported, the result is happier, although the case was but a simple papilloma: Man, aet. 54, had a papillomatous tumor of the left upper lid, encroaching somewhat upon the conjunctiva. It had existed 20 years. Repeated cauterizations remained without permanent improvement.

A single employment of 30 mg, radium bromid, with a radio-activity of 1,800,000, used for 10 minutes, was sufficient to bring about destructive degeneration in the tumor. Two months later the patient wrote that there was a complete cure. Valude concludes that radium is inefficient in malignant growths; but that in benign growths, even those with recurrent tendencies, its employment may prove efficient.

Recurrence of Parenchymatons Keratitis.

COLLOMB, Geneva, (Soc. Franc. d'Ophtal., May, 1905) gives his observations. Besides the simple relapses during the subsidence of interstitial keratitis, there also occur true recurrences coming on a shorter or longer period after the complete healing of the original infiltration. Ophthalmic literature is not rich in such reports.

Collomb had observed, in a clinical material of 65,000 cases, 170 cases of interstitial keratitis. Among these 8 had returned with true recurrences, after intervals varying from 8 months to 15 years. This percentage (about 5 per cent.) according to Collomb must necessarily be considerably lower than the real proportion of recurrences. These recurrences do not clinically

differ materially from the original infiltration; but they seem to be prone to leave behind much severer results than is usual in the ordinary cases. Thus the prognosis seems to be worse in the recurrences than it is in the original inflammation.

Experimental Aspergillus-Keratitis.

ROLLET and AUVAND, Lyon, (Soc. Franc. d'Oph., May, 1905) have investigated, besides Aspergillus fumigatus which is the best known form causing aspergillus-keratitis, the other forms that are nathogenic towards the cornea. Their first series. with A. fumigatus, proved this to be very pathogenic towards the rabbit's cornea; and that the keratitis so caused resembled closely that in the human cornea. The main difference was the absence of hypopyon, even when left without treatment. The cases recovered rapidly in 10 to 12 days, without corneal perforation. The voting spores of this form have a weakened virulence on the cornea. A. flavus is also pathogenic; but in a lesser degree than A. fumigatus. It produced an intense purulent conjunctivitis: but the corneal lesions it produced were slight and healed spontaneously in about 10 days, without hypopyon or other complications. A. niger is but slightly virulent; grows only moderately around the injection point, produces conjunctival catarrh without corneal complications, and disappears in 4 to 8 days.

A. picrum has but weakened power, shows little tendency to spread from the injection spot, and recovers in 3 to 11 days.

A. glaucus, astianus, and minimus are not pathogenic towards the cornea.

Gumma of the Cornea,

Terson, A., Paris, (Soc. Franc. d'Ophtal., May. 1905). It is well known that notwithstanding the observation of Magni, Peters, Denairie, Galezowski and Vinsonneau the occurrence of gumma of the cornea is still questioned. His case was a 22 year-old working girl, of hereditary syphilitic constitution. Four years previous she had suffered an interstitial keratitis. She recently returned with a severe iritis in the right eye, with light interstitial infiltration of the cornea.

"Treatment by injections of oleum biniodid and syrupus biniodid internally was instituted; but even while under way there appeared in the outer half of the cornea, spreading laterally, a thick, sharply circumscribed, yellowish infiltrate. It had all the appearance of a gumma.

After four deep injections into the glutei, it was rapidly absorbed, without breaking down, as it had at one time threatened to do.

Thus it seems that this hereditary late-syphilis may produce a true gumma of the cornea, as we know it may of the lids, conjunctiva, tear-sac, and ciliary body, as well as all other parts of the body.

Taraitis Tuberculosa.

ROLLET, Lyon, (Soc. Franc. d'Oph., May, 1905) reports two cases of tubercular tarsitis. The affection may be localized or diffuse. In the circumscribed form there is a nodule or a defined infiltration, thus resembling a chalazion. In the typical tubercular tarsitis there is a diffuse, thick infiltration of the entire tarsus, painless, and causing an annoying ptosis. It resembles the better known tarsitis syphilitica. It, however, is usually accompanied by characteristic affections of the skin and lids, swelling of neighboring glands, and other general symptoms. Histologically it shows tubercular nodules and giant cells in the tarsus. The treatment consists of curettage, deep incisions into the tarsus, and the cautery ("points de feu").

Tarso-Conjunctivitis Vegetans.

FAGE, Amiens, (Soc. Franc. d'Oph., May, 1905). The diffuse inflammation in vernal catarrh brings on a thickening of the epithelium, under which is developed a thick subconjunctival tissue. Histologically the epithelial increase preponderates. In the case of a 24 year patient there presented a number of small, adherent nodules of gelatinous appearance lying upon the pale infiltrated conjunctiva of the tarsus. There was no secretion. The microscope showed epithelial thickening with cell grouping. Under the thickened epithelium there was a thickened connective tissue; its meshes at places were infiltrated with round cells; this infiltration was much thicker in the neighborhood of the tarsus. The epithelial thickening in this case is apparently secondary.

Differential Diagnosis Between Parlnaud's Conjunctivitis and Tuberculosis of the Conjunctiva.

CHAILLOUS, Paris, (Soc. Franc. d'Oph., May, 1905) bases his conclusions upon three cases observed at the Lariboisiere. These demonstrate the difficulty in distinguishing this form of infectious conjunctivitis of animal origin from tuberculosis of the conjunctiva. Often the clinical features are so alike that the histological examination is necessary; and this may be further cleared by culture tests.

In the nodules of Parinaud's conjunctivitis one never finds

giant cells; while these are rarely lacking in tuberculosis of the conjunctiva. The culture experiments are positive in tuberculosis conjunctivæ, and thus readily distinguish it from the other

Diagnosis of iris-Tubercie by Puncture of the Anterior Chamber.

Gourfein, Geneva, (Soc. Franc. d'Ophtal., May, 1905) recommends a method to differentiate iris-tubercle from any other nodular affection of the iris. He makes a puncture of the anterior chamber of the affected eye; and the aqueous humor thus drawn off he injects into the eye or under the skin of a rabbit or guinea pig. The results, either positive or negative, are equally conclusive. He adds two new cases to two previously published. In two with positive results other symptoms developed, and one later died from tubercular meningitis. In one with negative results iris-tubercle was excluded; and, furthermore, energetic anti-syphilitic treatment resulted in very decided improvement, thus verified the diagnosis.

Difficulty of Diagnosing the Syphilitic Origin of Iritis.

AUBINEAU, Brest, (Annales d'Oculistique, T. CXXXIV) holds that only in the minority of cases can the syphilitic origin of iritis be unquestioned. In but comparatively few cases are there present condylomata; and rarest of all are condylomata or mucous patches of the mouth or other mucosæ. These, of course, render the diagnosis certain. In still fewer cases are there present condylomata; and rarest of all are condylomata of the iris. These are considered pathognomonic. Usually one must have recourse to the personal history; and fortunately this does not usually leave one in the lurch.

Aubineau thinks that there are often mixed forms, in which some accompanying secondary infection or auto-intoxication is responsible for the iritis itself. In such cases the clinical picture is modified accordingly. The clinical picture of a typical case of syphilitic iritis is very characteristic; but in such mixed or atypical forms it may be modified in a perplexing variety of ways.

Primary Tuberculosis of the Conjunctiva.

Moissonnier, Tours, (Annales d'Oculistique, T. CXXXIV) observed a case in which the conjunctiva presented reddish granulations, and a large oval ulceration. The diagnosis was confirmed by culture and inoculation.

A purely local treatment, following curettage, was succeeded

by disappearance of the conjunctival lesions; but the condition passed over into a tarsitis tuberculosa.

[What is striking—and leads me to briefly abstract this case—is the number of such reports abroad, with the almost entire absence of such reports in this country. There seems to be no explanation for this difference.—DeBeck.]

Full Correction for Myopia.

Bourgeois, Reims, (Soc. Franc. d'Ophthal., May, 1905). opens a symposium on myopia, etc. Although Donders and Girard-Teulon had advised the full correction for myopia, in young subjects with normal vision and amplitude of accommodation, it is only since the work of Foerster (1883). Priestley Smith (1890). Bravais, Dor and others that greater attention has been given this matter. Based upon 21 treatises upon this subject, and a series of personal communications from French ophthalmologists Bourgeois has formed the following conclusions:

Most oculists agree that the overstrain of convergence in near work is the chief cause of the development and increase of myopia. The total correction has a beneficial effect upon the myopia, whose increase by near work is prevented or retarded. Still it is doubtful if the full correction is of advantage in the so-called malignant myopia.

With the young having myopia of moderate grade the full correction can be made at once; with higher grades it is better to proceed by stages to finally full correction. Even myopia of slight degree (fractions of a diopter) should be exactly corrected in children; for by this means the further progress of the myopia may be prevented. Young myopes of moderate degree (up to 3 D.) tolerate in youth the full correction for near and for distance. A more systematic examination and correction of school children is desirable. Young myopes of middle grade (3 to 6 D.) bear the full correction easily during youth. For the higher grades the following rules are applicable in the great bulk of cases. In youth the full correction to 7 to 8 D. is well borne; with higher grades the full correction must be reached by gradually increasing the correcting glass; for excessive myopia (over 12. D.) no fixed rules seem to be possible.

The simultaneous correction of even the slightest degree of astigmatism is regarded as most important. In anisometropia the subjective toleration is the guide for the full correction, or not.

With accompanying insufficiency of the interni the prismatic effect of decentering the lenses should be employed.

With the myopia progressive, the general health of the child should receive careful attention.

As practical points he advises that during the school-life the correction glasses should be ground in large periscopic lenses, cut either round or slightly elliptical. He is so insistent upon the keeping of a correct reading distance (30 to 40 cm.) that he advises the wearing of some form of head-holder if this is not otherwise maintained.

SULZER, JAVAL, GOLESCEANO, DOR, VACHER and CHEVALLE-REAU all speak for the full correction of the myopia.

OSTWALT, while usually giving full correction, does not think it feasible or advisable in all cases.

Antonelli gives two glasses, full correction for distance, and a weaker glass for near.

LAGRANGE is opposed to the full correction as a general rule, as frequently it is badly borne. He corrects as near the full correction as can be worn with fair comfort under ordinary conditions.

MOTIAS (Angers) in discussing the etiology of myopia laid the greatest importance upon accommodation-spasm as a causative factor.

DUFOUR (Lausanne) laid the greatest stress upon tenotomy of the externi as a means of checking the progression of the myopia.

JAVAL (Paris) recommended the introduction of vertical writing in the schools as one means of combating the development of myopia. The school authorities should permit only this style of writing. He promises a larger work on this subject in the near future, being now engaged upon it.

On Convergence in Corrected Myopia.

BOURDEAUX, (Soc. Franc. d'Ophthal., May, 1905) as a contribution to the above subject gives the results of some researches. With the Remy diploscope he finds that in most myopes with full correction normal binocular vision does not result at once; but that there is too strong convergence. Before correction the myope looking at objects at his far point must still use strong convergence; and after full correction this habit of excess convergence persists.

The onset of vertigo, diplopia and headache complained of by many authors after full correction, Bourdeaux holds to be due to this over swing of convergence, until the new relations are established.

Orthoscopic Glasses.

TSCHERNING, Paris, (Soc. Franc. d'Oph., May, 1905) holds that biconvex and biconcave lenses should no longer be found in the test-cases of oculists, nor in the use of patients. Both these sorts present phenomena of strong spherical aberration and astigmatic effect in consequence of the oblique position of the lenses towards the visual lines in the peripheral parts of the glass. Biconvex lenses produce a high degree of contraction of the visual field. He presented a test case of periscopic and plano-spherical lenses. The latter may be employed when combinations of sphericals and cylinders are being chosen. With patients up to 3. D. + or — may be given in plano-spherical in place of the periscopic glasses.

Antonelli, Paris, in discussing this paper, recommended the plano-schericals in preference to the periscopics. The latter are too heavy; and another practical disadvantage that must be considered is that they are too expensive as yet. In grinding a cylinder upon the plano surface he advises with concave glasses grinding a convex cylinder upon the front face; and with convex glasses grinding a concave cylinder on the posterior face. The distance of the cylindrical surface from the eye being always considered. In high myopia he finds that plano-concave lenses give better results than periscopic ones.

The Origin of the Antipathy to Glasses.

SULZER, Paris, in closing the symposium gives an interesting historical sketch. From the 15th to the middle of the 19th century glasses were selected only by opticians. In these early days the Paris College of Physicians barred out all whose work included selecting glasses; just as earlier still they had been inimical to chirurgeons, and banished much of that work to the barbers. Only few of the learned knew of the advances in optical science due to Roger Bacon, Descartes, Keppler and Lahire.

Oculists themselves, even to the middle of the last century, advised against the use of glasses as long as possible; and were wont to ascribe many or most eye affections of functional character to the too early use of glasses, or even to their use at all.

Chronic Conjunctivitis from Astigmatism.

CAPDEVIELLE, Valladolid, (Soc. Franc. d'Ophtal., May, 1905) refers to the long recognized relation between ametropia and blepharo-conjunctivitis; but that little attention has been given

to the role of astigmatism alone as a cause of this condition. Based on a series of cases he formulates the following conclusions:

- 1. There unquestionably are cases of chronic conjunctivitis, that are solely due to astigmatism. This does not appear as a characteristic clinical disease; but under a complex of varying symptoms, the only common union being this common cause.
- 2. The origin of this conjunctivitis appears to depend upon an accommodative asthenopia.
- 3. The only treatment giving constant and enduring results is the exact correction of the refractive error.
- 4. It follows that in all cases of chronic conjunctivitis one should examine the refraction, and correct all errors of refraction, especially small degrees of astigmatism.

TERSON in the discussion stated that he had often relieved troublesome chronic hyperemia of the conjunctiva by cylindric glasses. The headaches due to the same error he had seen relieved at times; and at other times persist. Too much stress is laid on this; he thought that there was an "ocular headache"—but not always.

[I abstracted this not on account of its novelty, but rather as a charming bit of ancient history for us here in America.

—De Beck.]

Collargol in Ophthalmia Neonatorum.

DEMETS, Anvers, (Soc. d'Franc. d'Ophtal., May, 1905) calls attention to the well known dangers in the use of nitrate of silver in this affection. It can hardly be questioned that its use during the critical period, the first week, may have a still further injurious influence upon the nutrition of the cornea, already imperilled by the edema and chemosis; and may even lead to its destruction. Moreover it must be used daily by skilled hands, and often over periods of weeks. This is often impracticable, and it is perilous to put its use into lay hands. He has used collargol in such cases for over a year now, and its convinced of its equal value therapeutically with nitrate of silver, and its great advantage in being free from the above drawbacks.

[In the discussion Armagnac, Lagrange and Wicherkiewicz held that nitrate of silver had a place in the treatment of this affection that no other remedy so far proposed could replace, and that it was only necessary to know how to use it. And many of us are again coming around to the view of these older men.]

Hypopyon Keratitis Treated by Serum Therapy.

OLIVARES, Tortosa, (Clinique Ophtalmologique, June 25, 1905) reports upon three cases of ulcus serpens treated by Roemer's serum.

In the first case, after washing out the conjunctival cul-desac with a solution of mercury cyanid (1 to 2000), he injected 10 ccm. of the serum to the left side. Xeroform and an occlusion bandage was applied. The next day there was an enlargement of the ulcer, and an increase of the infiltration both upon the floor and at the edges. He used the galvano-cautery, injected 20 ccm. to the right side, and applied xeroform and the bandage as before. Bacteriological examination showed it to be a pneumococcus ulcer; and the next day showed it to be still further spreading. He now dropped the serum injections, and made a sub-conjunctival injection of 1 ccm. of the mercury cyanid (1 to 2000). On the next day, even, the process had come to a standstill. With touching the lower active edge of the ulcer with the galvanocautery, and further sub-conjunctival injections of the cyanid the ulcer healed.

In the second case, after the first serum injection, there was a decided improvement; but this was followed by a new infiltration and spread of the ulcer. Two further serum injections failed to bring the ulcerative process to a standstill.

The use then of the galvanocautery and subconjunctival injections of the cyanid was followed by prompt healing. The bacteriological character of this ulcer was not determined.

The third case was similar to that above. Three serum injections—although at the same time accompanied by the use of the galvanocautery—failed to check the process. Under subconjunctival injections of the mercury cyanid which followed healing was prompt. An excellent result was obtained, with even fair vision. Based upon these results he regards the serum therapy as very uncertain, and offering little promise. The subconjunctival injections of antiseptics, on the other hand, he regards as vastly superior. And he uses these injections, as they are perfectly harmless, not only in infected ulcers, but also in simple ulcers in which there is the slightest suspicion that they may have been infected and will develop into infectious ulcers.

Vapor Therapy in Ocular Troubles.

GOLESCEANO (Soc. Franc. d'Opthal., May, 1905) recommends the use of warm steam or vapors at 45 to 50 degrees C. directed against the eye by means of an apparatus that can be regulated, and by which the vapor can be kept at a fixed tem-

perature. The cornea bears this degree of heat easily in repeated daily sittings of from 5 to 10 minutes' duration. The hyperemia resulting from this fixed temperature aids in the rapid regeneration of the inflamed tissues.

He also describes a special appliance by means of which the vapors may be made to exercise an indirect effect upon the globe by being applied through the nostril.

Ophthalmia Neonatorum of Lacrimal Origin.

PECHIN, Paris, (Soc. Franc. d'Ophtal.. May, 1905) holds that there are some cases of conjunctivitis in new born children, with muco-purulent secretion, in which the usual treatment by antiseptic lavage and astringents is not followed by improvement. These are on examination found to be caused by an obstruction of the lacrimal passages—occasionally by a mere eversion of the punctum in overly fat babies. In such cases it is only after injections, or possibly after the passage of a lacrimal probe has removed the lacrimal obstruction that recovery takes place.

Radical Operation for Dacryocystitis.

FROMAGET, Bordeaux, (Soc. Franc. d'Ophtal., May, 1905) holds that any case of chronic dacryocystitis that is so intractable as to require any of the radical procedures that have been recommended in such cases had better be given the possible benefit of all of them at once. It is rare that permission is secured to perform a second operation where one has failed to secure full benefit. He therefore combines at one sitting the three operations of extirpation of the tear sac; curettage of the lacrimo-nasal duct, and removal of the lacrimal gland.

Orbital Abscess and Purulent Inflammation of the Tear Gland Foliowing Grippe and Post Grippal Otitis Media.

Antonelli, Paris, (Soc. Franc. d'Ophtal., May, 1905) reports a case of a girl of 11 years in whom an attack of influenza was followed by an otitis media purulenta. Following this an orbital abscess and a purulent dacryoadenitis occurred. His idea of the direct passage is interesting. His view is that the pus passed from the tympanic cavity through Glaser's fissure and the sutura-petro-tympanica into the fossa pterygomaxillaris, and from there through the fissura spheno-maxillaris along the outer wall of the orbit until it reached the neighborhood of the lacrimal gland. Here it formed the abscess, and caused the inflammation of the gland.

Recurrence of Epithelioma of the Lacrimal Gland.

DUPUY-DUTEMPS, Paris, (Soc, Franc. d'Ophtal., May: 1905) reported two years ago the extirpation of a tumor of the lacrimal gland, which examination showed to be an epithelioma. Sixteen months later there was a recurrence. For this he was compelled to do an evisceration of the orbit. The histological examination of this showed it to be an epithelioma; but it was interesting in showing at several points typically carcinomatous changes.

Primary Lympho-Sarcoma of the Tear Gland.

GONDRON. Lorient, (Soc. Franc. d'Ophtal., May, 1905) reports the case of a young man of 18 with a tumor under the upper orbital margin, pushing forwards into the internal angle. This he removed by means of the Kroenlein operation.

The microscopical examination showed it to be a lymphosarcoma which has sprung from the capsule of the lacrimal gland.

A few months after the operation there was a recurrence, from which the patient succumbed.

Orbitai Meningocele.

ROHMER, Nancy, (Soc. Franc. d'Ophtal., May, 1905) reports the case of a child of eight months with a symmetrical tumor to the nasal side in each orbit. They were not unlike large mucoceles of the tear sac.

The tumor on the right side was removed with no complications, and the microscopical examination proved it to be a meningocele. The extirpation of the tumor on the left was. however, followed by meningitis.

Study of the Path of Sarcoma From the Chorioid Into the Orbit.

Cosse, Tours, (Soc. Franc. d'Ophthal., May, 1905) reports a carefully observed case that throws clear light upon this point. In the right eye of a woman of 47 there was observed in April, 1903, a tumor under the retina, and in front of the equator. The retina was not elsewhere detached. Enucleation was refused. In January, 1905, severe pains set in, which were relieved when a dark mass or point broke through at the sclero-corneal margin. Evisceration of the orbit was performed. The entire bulbus was found filled by a melanotic tumor, and examination showed this to be a sarcoma.

But the sections showed in a most clear and interesting manner the path that the growth had taken in its exit from the eye-

ball. The growth had begun in the ciliary body, and had from this point spread throughout the iris. Then the path of the tumor invades the canal of Schlemm, the tumor cells being traceable through the lymph interspaces. Then little spurs of tumor cells can be traced further and further into the sclera and finally into the conjunctiva. Here larger masses of the tumor are found, and its further spread into the orbit is plain.

The retina was now detached in a small mass behind the lens, but had taken no part in the sarcomatous process. Neither was the posterior portion of the sclerotic, nor any portion of the optic nerve involved.

Ophthalmia Nodosa.

VALUDE, Paris, (Soc. Franc. d'Ophtal., May, 1905) observed a case of this disease caused by the entrance of caterpillar hairs into the eye. Clinically the condition was marked by the development of a large number of small, grayish, superficial nodules in the cornea. Inflammatory reaction not severe. Under moist applications and bandage there was rapid recovery.

ABSTRACTS FROM ITALIAN OPHTHALMIC

By V. L. RAIA, M. D.,

PROVIDENCE, R. I.

Two Rare Cases of Ocuiar Syphilis.

MAGNANI (La Clinica Oculistica, February, 1905). In the first case the patient showed under a mydriatic punctiform deposits of pigment on the anterior surface of the lens with opacities of the vitreous without the least symptom of inflammation of the iris. Mercurial treatment under the form of inunctions rapidly improved vision, while the opacities of the vitreous and the deposits of pigment disappeared. The author considers the affection as a simple syphilitic retinitis, differing from the class described by Jacobson in its propagation to the anterior part of the retina, instead of being limited to the posterior pole of the eye. This propagation can be easily explained when we consider that the posterior layer of the iris is, according to modern researches, a direct continuation of the retina.

In the second case, with a history of syphilitic infection, one of the eyes developed a nodule on the surface of the iris, encroaching on the pupil, which became occluded; and hypopyon was present. Under mercurial treatment, the tumor and pus of the anterior chamber slowly and gradually disappeared, while the other eye developed serous iritis. The absence of vascularization of the tumor, its slow absorption, and the formation of the hypopyon have induced the author to make a diagnosis of gumma of the iris, although it is difficult to discriminate between this latter and a papule of the iris of the secondary stage of syphilis.

Primary Glaucoma Due to Occlusion of the Pupil by the Lens; Evil of Miotics.

CIRINCIONE (*I.a Clinica Oculistica*, March, 1905). The author had a case of acute glaucoma in which the anterior chamber had completely disappeared, the iris and the lens being pushed against the posterior surface of the cornea, and the instillation of eserin always increased the severity of the glaucomatous attack. In performing an iridectomy only when the iris was separated with the forceps from the anterior sur-

face of the lens, aqueous was seen flowing through the corneal incision, the anterior chamber being absolutely empty of humor. The author says that in such cases of glaucoma swelling of the vitreous by edema produces a displacement forward of the lens and iris, occlusion of the pupil, stoppage of ocular lymph in the posterior chamber and disappearance of aqueous in the anterior. Miotics in these cases produce more impediment to the lymphatic circulation by narrowing the pupil and tightening its edges on the anterior surface of the lens and consequently they aggravate the disease.

On the Best Method of Blepharopiasty.

- · CALDERARO, (La Clinica Oculistica, April-July, 1905). Dr. Calderaro has had abundant material and opportunity to study this important subject anatomically, clinically and experimentally; and in his article he draws the following instructive conclusions:
- 1. The best method of blepharoplasty consists in the formation of a flap with a pedicle to which more or less torsion is given, transplanted from the neighboring regions (Fricke's method).
- 2. The flap to be transplanted must be twice as large as the loss of substance to be repaired.
- 3. The pedicle furnishes the nutrition to the transplanted flap for the first 36 hours, after which its vitality is sustained directly by the surface of implantation.
- 4. While the body of the flap must be skin alone, the pedicle must comprise skin and subcutaneous tissue.
- 5. These flaps will adhere even on bones denuded of periosteum.
- 6. The loss of substance due to dissection of a flap is either repaired by approximation of the margins of the wound, or left to granulate, the result of which is always better than that obtained by skin graft.
- 7. When the neighboring regions are not in good condition, the flap with a pedicle must be transplanted from distant regions (Tagliacozzi's method).
- 8. The result of a transplanted flap with torsion of the pedicule is permanent, at least for one year.
- 9. Transplantation of flaps by sliding (French method) ought to be abandoned, the great retraction of these flaps rendering the results very unsatisfactory.
- 10. Large dermic grafts (Wolfe method) are indicated to repair only superficial losses of the upper lids, for which the delicate skin of the prepuce is most useful.

- 11. Epidermis grafts (Thiersch) ought to be abandoned in ocular surgery.
- 12. Of the many palpebro-palpebral processes, the one advised by Prof. Cirincione is the best according to the author. To reconstruct one lid in toto, Prof. Cirincione separates the conjunctiva from the sound lid, sutures it to the margins of the conjunctiva, left of the affected one, and on this transplants by torsion a flap from a near region.

Contributions to the Study of Anterior Synechiotomy.

SCIONTI. (La Clinica Oculistica, April-July, 1905). Among the many instruments for the separation of the iris from the posterior surface of the cornea the author thinks that the Piccoli needle knife is the most practical one. The object of the operation is to prevent suppuration of the eveball and secondary glaucoma. The pathogenic germs which may be contained. as it is well known, in corneal scars in a latent state, under favorable conditions are apt to regain their old virulence and communicate the infection to the iris, and thence to all the corneal tract. By destroying all the anterior synechiæ an interruption is obtained to this possible propagation of the infection from the cornea to the inner membranes of the eye. On the other hand, the affection produces occlusion of the angle of filtration and glaucoma, which may be prevented and cured with synechiotomy. According to the author it is an impellant duty of every conscientious ophthalmologist to intervene surgically whenever he is called to treat an anterior synechia of the iris, whether this gives annovance to the patient or not.

Ocular Traumatisms Due to Caustics.

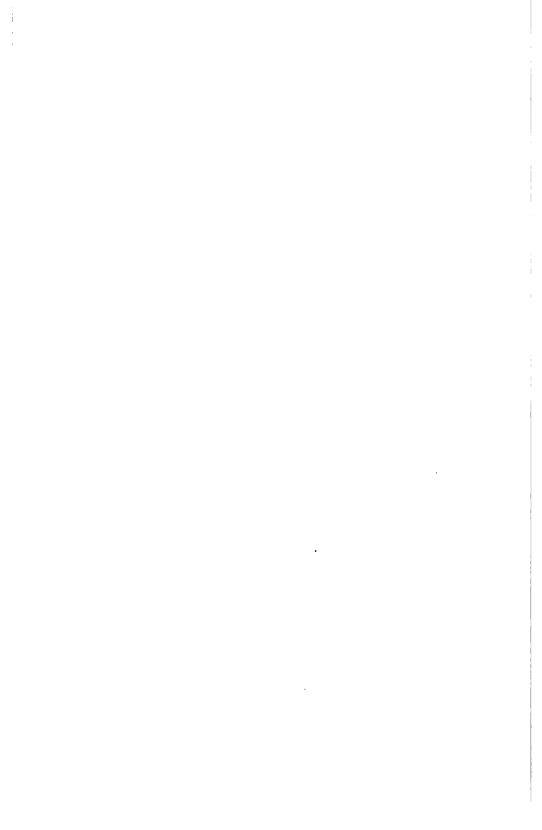
Ovio (La Clinica Oculistica, August, 1905). Lesions of the superficial layers of the eye and especially of the cornea from hot metals ordinarily disappear without leaving bad results, while chemical caustics are the most dangerous. Probably this is due either to the cooling effects of the external ocular fluids on the particles of metal, or to the spheroidal state assumed by the same by evaporation, thus avoiding the contact between the metal and the ocular tissues. On the other hand, chemical substances are readily dissolved in these fluids and have a great affinity for the tissue elements, producing their corrosion and mortification. Of the chemical substances, the alkalies are the most dangerous. The author has experimented on the eyes of rabbits with different acids and alkalies and has found that acetic acid

has a relatively weak action among the acids of this class. Of the alkalies, ammonia can be compared for its comparatively weak irritation to acetic acid.

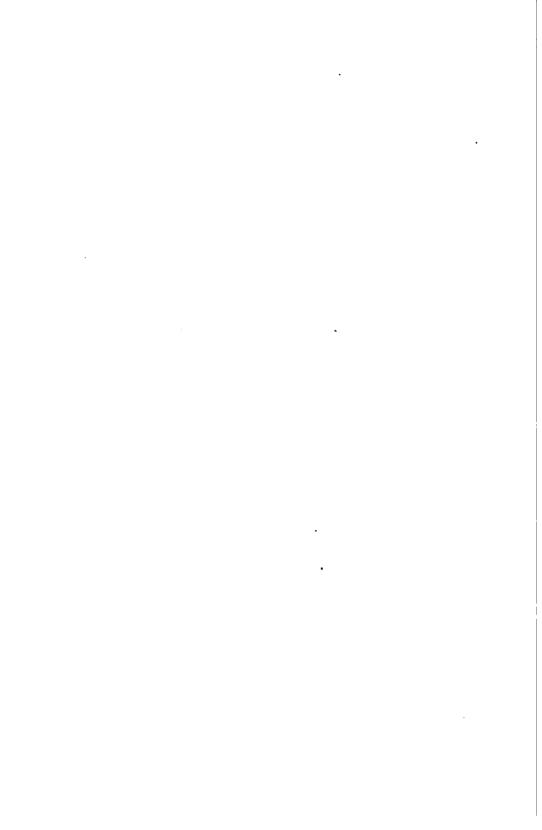
A Case of Orbital Suppurative Dacryoadenitis Following Facial

Erysipelas.

Moretti (Annali d' Ottalmologia, Fasc. 1-2, 1905). The author, after having briefly reviewed the anatomy of the lacrimal gland and the history of the affection, reports a case, occurring in his practice, of orbital suppurative dacryoadenitis during an attack of facial erysipelas. The etiologic factor, according to Dr. Moretti, is an infection propagated from the cutaneous lymphatics to those of the cellular tissue of the orbit. producing orbital cellulitis and then inflammation of the lacrimal gland. Dacryoadenitis may be orbital, palpebral and subconjunctival (inflammation of the acinous glands of Krause), or diffused, if two or more parts in which the lacrimal gland is divided are affected at the same time. Palpebral dacryoadenitis ends ordinarily in resolution, while the orbital type ends in suppuration. This latter is accompanied by fever, anorexia, general weakness and principally by deviation of the eve downward and inward, with limitation of movements upward and outward. In the palpebral and subconjunctival types, the general symptoms are wanting, the swelling of the upper lid is not so remarkable, so that this can be easily turned for the inspection of the fornix conjuntivæ; and the ocular movements are normal, or slightly affected. In dacryoadenitis due to infection (as it is in the present case) through the lymphatics of the skin to those of the orbit, orbital cellulitis precedes the dacryoadenitis and this explains the limitation of all other movements of the eveball, and also the exophthalmos.



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